THE OIL WEEKLY

MEMBER AUDIT BUREAU OF CIRCULATIONS

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IN THIS WEEK'S ISSUE

CHEMICAL RESEARCH

Chemical research and its application to the producing branch of the oil industry is discussed in an interesting and practical way by H. H. Hill, U. S. Bureau of Mines, in a special article written for The OIL WEEKLY, beginning on page 15.

IS YOUR LEASE LEAKING?

Is your property leaking? Most oil producing properties do leak and these leaks can run up into big figures unless watched. Leon Pepperberg, well known petroleum engineer and geologist of Dallas, who has made a close study of lease operation, tells the story. Page 21.

MORE OIL FROM TRINIDAD?

An American driller has at least partially solved the "fine sand" problem on wells in Trinidad by proper use of strainer. And incidentally, Trinidad is the Isle of Opportunity. Page 28.

DRILLING WITH ELECTRICITY

Saving is shown on well drilled with electricity at Long Beach, Calif.; some interesting figures. Page 34.

REVERSE RETURN ROTARY SYSTEM

Here is a practical description of something comparatively new in rotary drilling. It is worth while to rotary operators. Page 42.

SOME VALUABLE HISTORY

A thumbnail history of a large number of the important or semi-important oil fields of the United States is given beginning page 108. This data will answer many a question.

DRILLING COSTS

Drilling costs in various fields of the United States, and Mexico as well, are shown in a special article which details the costs in a large number of fields. Page 54.

PROFITABLE DEEP WELLS

California's deep wells—wells even below 4000 feet are practical for several reasons. They are given on page 62.

HOW TO FLOW A WELL

A new device designed to flow a well is described on page 66.

STATISTICS—AND STATISTICS

The statistical section begins on page 68—and every practical type of petroleum statistics is shown in that section.

USING THE DIAMOND DRILL

The diamond drill has a real place in the petroleum industry. Its use and its value are described on pages 50-52.

IS THE FAR EAST A MENACE

The question of Far Eastern production is discussed in a practical way beginning on page 12.

TREATING LUBE

Proper treating of lubricating oil in the agitator is described on page 18.

BUILDING TRADEMARK

Jack Nourse has found that a trade mark pays. He tells how and why on page 163.

NATURAL GASOLINE

An interesting article on natural gasoline, written by a man who knows, begins on page 147.

THE SKIMMING PLANT

Is a skimming plant a profitable investment? It is—sometimes, and on page 138 the type that pays is described.

REFINERIES OF U. S.

A list of all the refineries of the United States, presented in a new way with some some new information never before shown, begins on uage 158.

CURRENT NEWS SECTION

The current news section, giving the regular weekly reports on the various fields of the United States and Mexico, personals, etc., will be found beginning on page 164.

On three pages of this issue of The OIL WEEKLY will be found drawings with the signature of "M. Brisbine." The artist, Miss Margaret Brisbine, was a former student in the art school at Rice Institute where she gave much promise. She is now a student at Philadelphia Academy of Fine Arts where her work has already attracted attention.—Editor.

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THE OIL WEEKLY

An International Oil Publication

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MEMBER AUDIT BUREAU OF CIRCULATIONS

Where Will America's Future Oil Come From?

WHERE will America's new oil come from?

Where will our storage tanks get their supply from when present pools have shown the decline that will be but natural with their increasing age?

While the present proved areas within the United States have furnished much oil for this country and for foreign trade, the future oil must come from sections possibly not even semi-proven right now.

Five years ago the Ranger-Breckenridge, the Mexia and the Homer-Haynesville-El Dorado fields were not even thought of as oil fields, although prospecting was under way in those sections at that time. Today these fields are furnishing the world more than 330,000 barrels a day—or nearly one-fourth of the entire output of the United States.

What sections will be in the limelight five years hence?

There are at present four general sections that offer big possibilities.

One is from the Woodbine and possibly the Trinity sand throughout Central Texas, especially that section between Mexia and the Louisiana border.

The "inter-mountain" territory, that great stretch lying between the mountains cutting off the West Coast, and the present proved area of the Mid-Continent, including also the Dakotas, Montana, Wyoming, Utah, parts of Colorado and the arid desert to the south.

New discoveries in salt domes along the Gulf of Mexico and along the Mexican border.

Further possibilities in Mississippi and Arkansas, as well as Louisiana.

Some of this territory is described in detail in subsequent pages.

That much oil will come from deeper drilling in the present proved fields goes without saying, and here is a task to which the companies manufacturing oil field supplies are applying themselves and can apply themselves still further. There is much room for improvement in deep well drilling, but the improvement during the past two or three years has been very marked.

Just as the Statistical Edition of The OIL WEEKLY goes to press and after the foregoing paragraphs were written, the joint report of the American Association of Petroleum Geologists and the United States Geological Survey has been made public in Washington.

This work gives the total oil reserve of the United States on Jan. 1, 1922, as 9,150,000,000, with the Coastal domes of South Texas and Louisiana holding 2,150,000,000 of that total. Other fields in Texas hold 675,000,000; North Louisiana and Arkansas 525,000,000; Oklahoma, 1,340,000,000; and California 1,850,000,000 barrels.

This report is the result of joint efforts of the association of geologists, working in conjunction with the Geological Survey. The governmental officials invited members of the association to help in the work at the annual convention last March in Tulsa, Oklahoma.

Oil yet held underground in the other producing States of the country is given as follows: New York, 100,000,000 barrels; Pennsylvania, 260,000,000; West Virginia, 200,000,000; Ohio, 190,000,000; Indiana and Michigan, 70,000,000; Illinois, 440,000,000; Kentucky, Tennessee, Northern Alabama and Northeastern Mississippi, 175,000,000; Missouri, Iowa, North Dakota, Wisconsin and Minnesota, 40,000,000; Kansas, 425,000,000; New Mexico and Arizona, 50,000,000; Wyoming, 525,000,000; Montana, Nebraska and South Dakota, 100,000,000; Utah, Nevada, Oregon, Washington and Idaho, 80,000,000; Eastern Gulf Coastal Plain and Atlantic Coast States, 10,000,000 barrels.

One of the men who worked on this joint committee was Alexander Deussen, whose article on Gulf Coast salt domes will be found on subsequent pages of this issue.

The "Fifth Statistical"

THIS issue of The OIL WEEKLY, its Fifth Annual Statistical Edition, is offered to OIL WEEKLY readers by its editors as the answer to the eternal question marks that are coming up in the industry as to what has happened in the past.

From a statistical standpoint we believe it will answer every reasonable question as to production, consumption and refinery activity in the past that can come to mind. For the last several months we have found ourselves waiting for the "Fifth Statistical" to answer questions on petroleum figures that have been coming up at regular intervals, and we know that it can answer your questions.

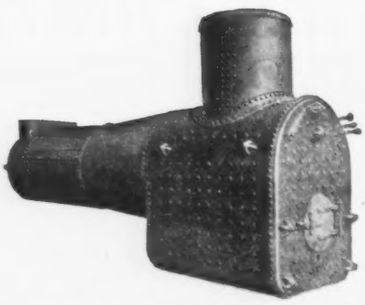
From a historical standpoint, which, after all, is but a half-brother to the statistical standpoint, it offers the oil industry concisely stated data, the compilation of which will answer many a question.

From a technical standpoint it offers articles of constructive value to the industry. Its technical articles are timely and forecast many things which will be in universal use possibly by the time the next "Statistical" issue is out.

We have spent much time and much care in its preparation and feel indebted to our staff of regular writers and our friends in the industry who contributed to it. We are also indebted to its advertisers who have made it possible.

The Fifth Annual Statistical Issue of The OIL WEEKLY belongs to the petroleum industry. It was made for you—it will answer your questions—90 per cent of them. Keep it for reference. You'll appreciate its value all the more every time you delve into it in quest of particular information.

Outlook Favorable



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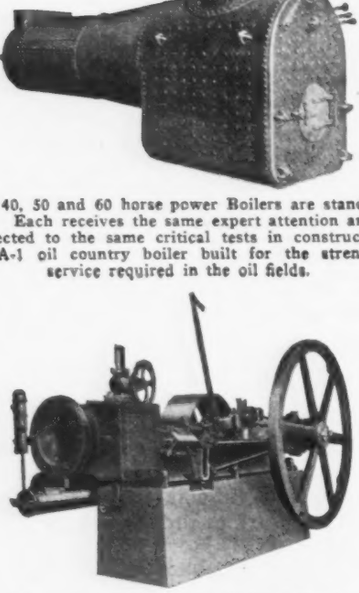

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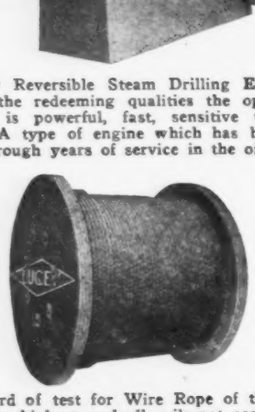

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Salt Domes of Texas and Louisiana

To date 61 have been discovered, but future discovery more difficult; lowest production limit not now reached

By Alexander Deussen *

THERE are no more interesting geologic structures in the United States than the salt domes of the Coastal Plain of Texas and Louisiana. Nowhere else in this country are analogous features known, and with the exception of those on the Isthmus of Tehuantepec in Mexico there is no record of similar occurrences in the Western hemisphere. However, in Europe, Africa and Asia analogous bodies are known, but none of these have been as yet the source of the prolific oil production that has characterized the Texas and Louisiana domes.

The salt domes of Texas and Louisiana have played a most important role in the history of these two states. The domes in the interior portion were known to the Indians in the days before the advent of the white man, being places where they gathered salt, and also favorite hunting grounds because the wild game sought these spots where they might lick the salt that found its way to the surface. In the early history of East Texas, these spots were likewise well known to the first settlers, because in those days salt was very difficult to secure, and these pioneers sought out these places and made salt from the brine waters obtained at a very shallow depth. During the Civil War when the Federal blockade precluded the importation of salt into the Southern States, salt was manufactured at these salines on a rather extensive scale, and sent to various points in the South, the ruins of these primitive works being still in evidence at many of these places.

Southern Louisiana

The salt islands of Southern Louisiana were the source of curious interest with the first advent of the white man. The well known Five Islands are the most prominent topographic feature in Southern Louisiana, and Belle Isle, one of the five, because of its elevated position, is reputed to have been the haunt of the celebrated pirate Lafitte. Joseph Jefferson, the actor, sought another of these islands (Cote Carline) to build a magnificent winter home, and because of the presence of mineral springs, conceived the notion of boring a well for health-giving mineral water. He engaged Captain A. F. Lucas to drill this well for him and in the drilling of this well Captain Lucas entered salt at a shallow depth with some showings of sulphur. It was while engaged on this work, and in subsequent explorations at Belle Isle that Captain Lucas gained the idea that other salt domes could be found in the Coastal Plain, which might yield commercial quantities of sulphur and oil, and later induced him to start operations at Spindletop, where the indications led him to believe another of the salt domes existed.

But prior to the Lucas discovery at Spindletop in 1901, Weeks Island and Avery's Island had been explored for salt and had become the source of commercial and profitable salt production. And likewise prior to the Lucas discovery, Sulphur, another of the salt domes, had become the source of the main sulphur production in this country, through the use of the newly discovered Frasch process of melting the sulphur in wells with superheated steam.

Most Important Chapter

The most important chapter in the history of the salt domes, and likewise in the history of Louisiana and Texas, was when Lucas demonstrated in 1900 that the salt domes were also capable of producing oil in prolific amounts—a fact hitherto unknown. The Lucas discovery likewise gave an impetus to the oil industry which it had not heretofore enjoyed, initiating its expansion to its present gigantic proportions. The rise of such important companies in the oil business as the Gulf Oil Corporation, The Texas Company and the Humble Company, is intimately related with the discovery of the productive nature of the salt domes.

Since the date of the Spindletop discovery, a period of 20 years, the salt domes have produced in round numbers approximately 400,000,000 barrels of oil. Of the various contributors, Humble, to date has been the most prolific, with a production to January 1, 1921, of 84,688,292 barrels. The rank and production of the other domes to Jan. 1, 1921, is as follows:

Production of Gulf Coast Salt Domes to Jan. 1, 1921

	Barrels
Humble	84,688,292
Sour Lake	58,891,241
Spindletop	47,065,804
Jennings	41,722,216
Goose Creek	30,918,177
Batson	30,354,680
Saratoga	20,538,551
West Columbia	18,886,599
Vinton	15,562,143
Hull	6,375,387
Edgerley	5,869,781
Damon Mound	2,216,492
Total	363,080,363

To date a total of 61 domes are definitely known in the States of Texas and Louisiana. A list of these follows:

List of Domes in Texas and Louisiana

Cote Blanche	Hockley
Belle Isle	Damon Mound
Week's Island	West Columbia
Avery's Island	Hoskins Mound
Jefferson Island	Stratton Ridge
New Iberia	Bryan Heights
Bayou Bouillon	Big Hill (Matagorda Co.)
Catahoula Lake	Markham
Anse La Butte	Pine Island
Jennings	Brenham
Welsh	Butler
Sulphur	Keechi
Edgerley	Salt Works
Vinton	Brooks
Hackberry	Steen
Cow Bayou	Grand Saline
Spindletop	Rambo
Saratoga	Bistineau
Sour Lake	Kings
Batson	Rayburn's
Hull	Price's
South Dayton	Drake's
Big Hill (Jefferson Co.)	Winnfield
High Island	Cedar Lick
Davis Hill	Castor
North Dayton	Brown's
Barber's Hill	Many
Goose Creek	Piedras Pintas
Humble	Falfurrias
Pierce Junction	Palangana
Blue Ridge	

The 61 domes listed above may be classified into geographic groups as follows:

Domes of the Gulf Coast District East of the Guadalupe River in Texas and West of Vermillion River in Louisiana

Jennings	Dayton
Welsh	Barber's Hill
Sulphur	Goose Creek
Edgerley	Humble
Vinton	Pierce Junction
Hackberry	Blue Ridge
Cow Bayou (Orange)	Hockley
Spindletop	Damon Mound
Saratoga	West Columbia
Sour Lake	Hoskins Mound
Batson	Stratton Ridge
Hull	Bryan Heights
South Dayton	Big Hill (Matagorda Co.)
Big Hill (Jefferson Co.)	Markham
High Island	Anse La Butte
Davis Hill	

Domes in the Gulf Coast District East of Vermillion River in Louisiana

Cote Blanche	Jefferson Island
Belle Isle	New Iberia
Week's Island	Bayou Bouillon
Avery's Island	Catahoula Lake

Domes Intermediate Between the Gulf Coast and Interior Districts

Pine Island	Brenham

Interior Domes

Butler	Rayburn's
Keechi	Price's
Salt Works	Drake's
Brooks	Winnfield
Steen	Cedar Lick
Grand Saline	Castor
Rambo	Brown's
Bistineau	Many
Kings	

Southwestern Domes

Piedras Pintas	Falfurrias
Palangana	

Domes Par Excellence

The domes of the first group—that is those occurring in the strip of country along the coast between Guadalupe River on the west and Vermillion River on the east—are the oil domes par excellence. These are the domes that have yielded the large commercial production, whereas the domes in the other areas have as yet not entered the class of producers, although some of them have either small wells, or have had showing of oil.

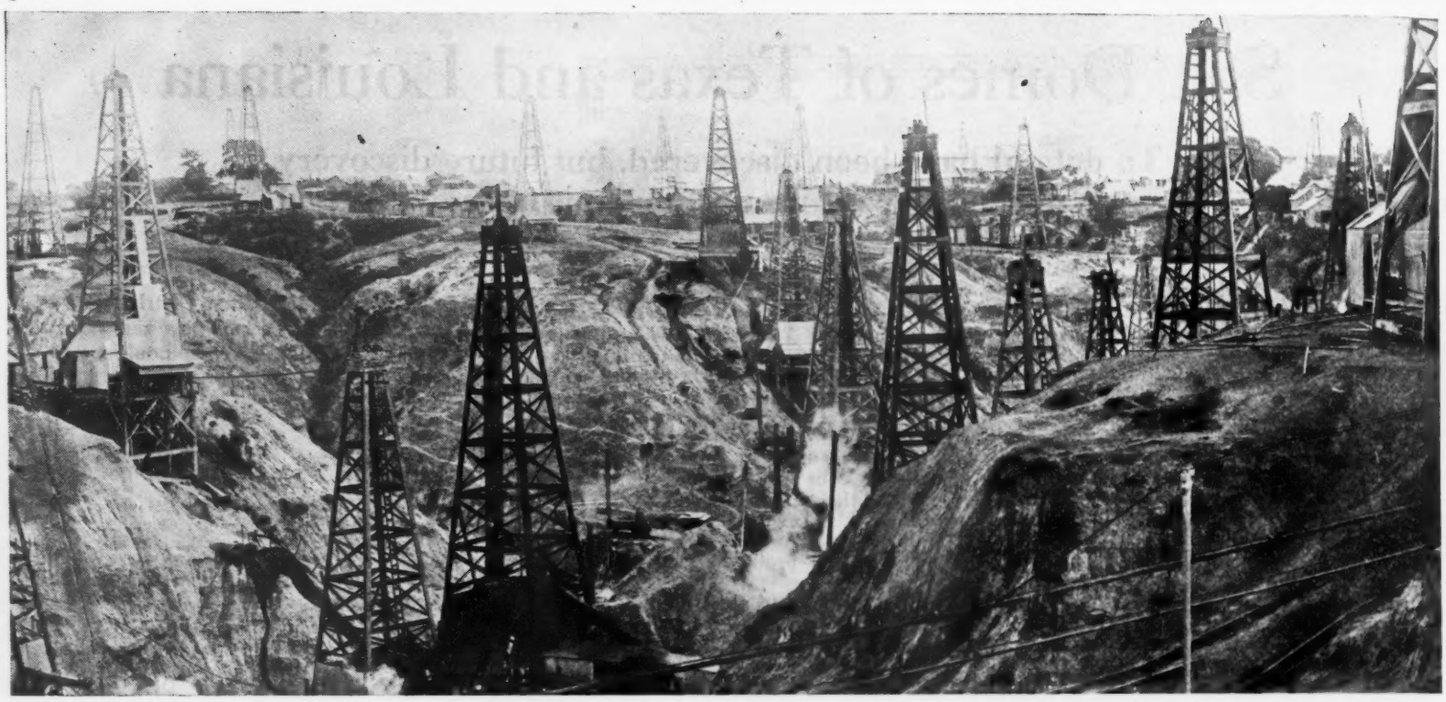
It is probably true that in the strip of country above referred to stratigraphic conditions have especially favored the chance for oil accumulations in large quantities around the domes at levels ranging from 4000 to 1000 feet.

The prospector in looking for new domes therefore, if he wishes to increase his chance for oil, will do well to look for them in the area referred to, because he is then looking for them in a country whose productive capacity has been proven.

It does not follow that the domes in the other provinces will prove to be productive. The writer is inclined to believe that a goodly number of them will, but the chances are that they will have to be prospected in a manner different from those in the productive region; they may have to be drilled to greater depths, possibly 5000 or 6000 feet, and possibly at greater distances from the periphery of the domes. To get back to the domes in the productive area—there are 31 of these domes known. Of these 31, there are 20 (64 per cent)

(Continued on page 16.)

*Mr. Deussen is a consulting geologist of Houston, Texas, and is one of the best posted authorities on salt domes in the United States.—Editor.



Part of Yenang Yung oil field in India

Is Far East a Menace to Domestic Production?

Possibilities in Asia, Asia Minor and the Islands of the Pacific engaged attention of world's greatest producers

By B. V. Ellzey

THE AVERAGE oil producer of the United States likes to find gratification in the thought that when the wells of this country quit flowing and can no longer be pumped, the mountains of the western states are full of shale, impregnated with petroleum hydrocarbons, and this shale can be made to yield the motor fuel of the future.

In like manner, the producer or refiner who takes a wider view of the situation—a world view—is gratified that there are known petroleum reserves underground in various countries of the East, and that when American oil cannot meet the world's needs, these Eastern reserves can be exploited, for all future demands.

Such a view is naturally predicated on the possibility of the American producer being given an opportunity to transfer or extend his activities to the fields of other continents, and this is a predicate to a statement of theory, the subject of which is yet mooted in the hazy clouds of international chicanery.

The possibilities of the Eastern countries may constitute either a menace or a boon, depending entirely upon the attitude of the observer.

If the Pennsylvania or Calfornia or Oklahoma producer is willing to exhaust his field without regard to the future needs of the country, he is likely to want protection by tariff walls from the importation of foreign oil and the future can go hang. To such a producer, the petroleum reserves of Mexico, or Colombia, or Baku, or the East Indies constitute a decided menace. In fact, any source of oil production outside the field in which such a producer has his own interests is a menace.

Five Questions

If the needs of the people in 1930 and 1940 are paramount, the petroleum reserves of the Far East may be considered a boon. And the leaders in the American petroleum industry are already busy with their plans for sharing in the exploitation of these reserves.

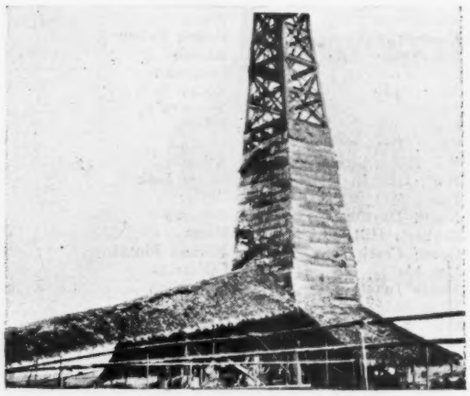
How much oil can each of the prospective countries produce?

How expensive will it be to produce oil in these countries?

Is it possible or can it be made possible for American interests to participate in the development of these reserves?

How long will it be until such reserves will have to be drawn upon to meet the domestic demand?

How rapidly will the demand for petroleum products develop in the countries contiguous to the petroleum reserves?



Well in Java drilled with Lucey rotary

These are the practical questions which are engaging the attention of those who shape the plans of the leading American oil companies, as well as the time and attention of a great portion of the world's statesmen and diplomats at the present time.

Without attempting to analyze all of these topics, or any of them completely within the limits of this discussion, some salient points will be recorded, from a mass of information and propaganda that has fallen into the hands of the investigator, with a view of giving the general outline of what may be expected to develop in the world's petroleum situation within the next few decades.

In quoting authorities herein, the writer is fully cognizant of the antipathy which many practical oil men have for scientific opinion. It remains, however, that scientific opinion is the only basis for shaping the national policies in such a way that Americans may be given equal privileges with other nationals in searching the earth for oil. It is through international agreements that free access of Americans to foreign oil fields may be obtained. And scientific opinion must be the guide to international agreements, in order that prospective territory may be exploited.

Dr. David White says that there is oil for the United States for 18 years, and oil for the world for 300 years. In other words, at the present rate of production, United States' oil resources will be depleted within 18 years' time, while there is sufficient underground reserves in the remainder of the world to last for 300 years.

Where is this oil?

Where the Oil Is

The Americas are now producing more than 80 per cent of the petroleum of the world. M.

E. Stefinger of the United States Geological Survey makes the following analysis of the known oil deposits of the world:

Country	Relative value	Million bbls.
U. S. and Alaska	1.00	7,000
Canada	.14	995
Mexico	.65	4,525
Northern South America, including Peru	.82	5,750
Southern South America	.51	3,550
Algeria and Egypt	.13	925
Persia and Mesopotamia	.83	5,820
Southern Russia, Southwest Siberia, Caucasus	.83	5,820
Roumania, Galicia and West Europe	.16	1,135
Northern Russia	.13	925
Japan and Formosa	.18	1,235
China	.20	1.375
India	.14	995
East Indies	.43	3,015
Total	6.15	43,055
Eastern hemisphere	3.03	21,255
Western hemisphere	3.12	21,800
North of Equator	5.20	36,400
South of Equator	.95	6,655

From the above estimates, based upon the best scientific data obtainable, it is seen that about half of the petroleum deposits of the earth are in the Americas. And it is further important to note that of the remaining reserves, the two most important districts are Persia and Mesopotamia and Southeastern Russia and Siberia.

Concerning the first district, Persia and Mesopotamia, there is so much political propaganda being disseminated at this time that it it impossible to outline just what chances there will be for the early exploration of these fields by American capital. It is hoped that the clouds will lift, and that an open door policy may be established that will give rights of exploitation to the nationals of all countries in Persia and Mesopotamia, and at least one of the major oil groups of this country is already protecting itself with valuable areas for development in case the international situation permits, according to accredited reports.

Southeastern Russia and Siberia are contiguous to our own west coast, and may be expected to be largely developed by American interests, if the time ever comes when the governments of these countries are sufficiently stabilized to warrant agreements, and to justify the investment of capital.

Where U. S. Is Excluded

At the present time, the United States is excluded from concession of, or territories under the influence of Great Britain (except Canada), France, Japan, and the Netherlands, or such concessions and privileges are given under restrictions which mean practical exclusion. Aliens are prohibited from exploiting oil lands of Burmah, India, Persia, Uganda and the United Kingdom. There are governmental policies of exclusion of other nationals from a control of supplies obtained in Algeria, Australia, Barbados, British East Africa, British Guiana, France, French West Africa, Guatemala, Japan, Formosa, Saghalien, Madagascar, Guinea and South Africa.

Many countries have regulations making it impossible to transfer oil rights to aliens, and many others vest the ownership of minerals in the state.

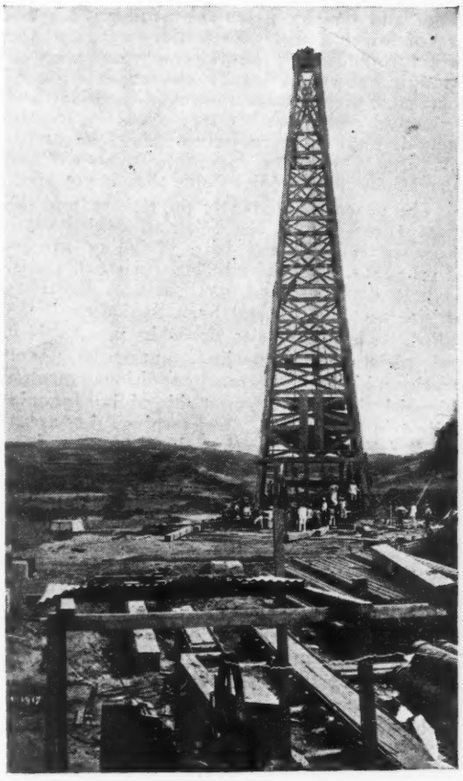
These are conditions with which the government only is in position to grapple. To undertake to outline what may be expected in this direction is to get out of the realm of fact or probability, and into a dream country. There is some basis for a hope that the closed doors of most of the nations of the earth, in so far as oil is concerned, may be opened by diplomacy, and that the policy of the United States in granting equal privileges to all nationals may be extended to those countries from which the oil of the future must come.

It is reported that the Standard is penetrating several of these foreign countries, on its own initiative, by making special agreements with bankrupt governments, under which the Standard is to be allowed the privilege of developing oil resources. Such an agreement was recently reported to have been made with Czecho-Slovakia.

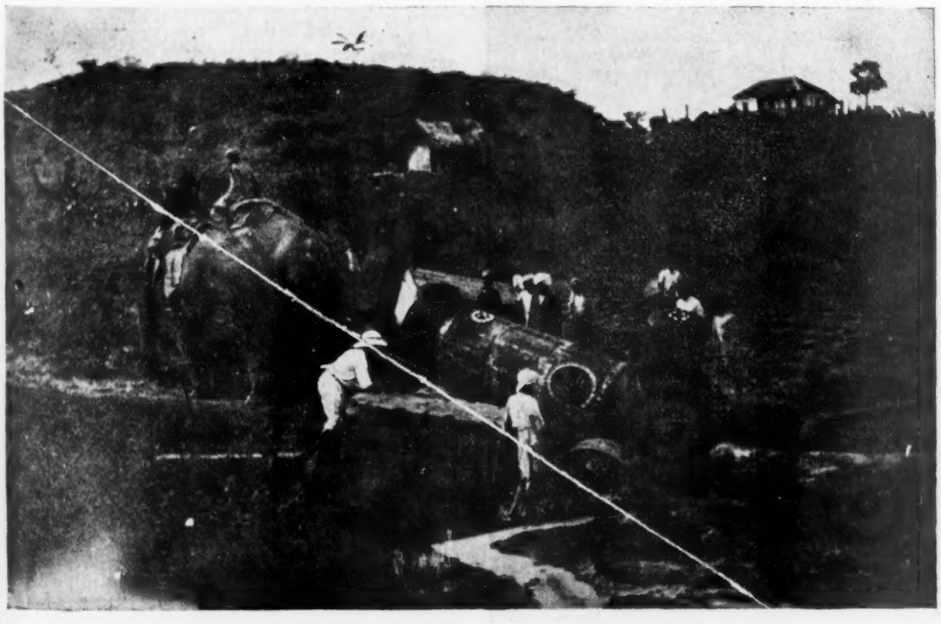
Some Encouragement

Some encouragement is obtained from recent published statements that barriers set up by England and France are being removed, and that territories owned or controlled by them may be exploited by Americans or others. Dr. Van H. Manning said recently:

"The establishment of on oil mandate principle assumed by the mandatory powers has been the subject of numerous discussions between the representatives of the governments of the United States and Great Britain, with particular reference to Mesopotamia during the past 14 months. The recent mutual exchange of assurances between these governments is that they find themselves in general agreement that the world's petroleum resources should be thrown open to all nations and that opportunity to explore and develop these resources wherever found should without discrimination be freely extended. While these governments appear to be in accord as to the principles involved, the adjustment of a division of the mandate territories is yet to be worked out in a way that will establish reciprocal relations as should exist between the United States and England. The latest note from Great Britain is an exposition of her claims through the Turkish Petroleum Co.'s rights to lease of the oil fields in the Vilayets of Bagdad and Mosul which, as it is known, include the petroleum resources in Mesopotamia. A discussion of the legality of this lease will not be entered into here. Suffice it to say, however, that there are very great doubts that these rights have been legally acquired and the matter can only come to a real issue when the abstract principle yields to concrete negotiations for a right to explore and exploit these resources."



Well in Java



Transporting boilers throvgh mud with elephants in Java

From Dr. Smith

Concerning the prospects for increased production in the important provinces of the Eastern Hemisphere, Dr. George Otis Smith says:

"In the Eastern Hemisphere, the intercontinental area of which the Caucasus Mountains form an axis, includes the fields of greatest promise in both Europe and Asia. On the European side the Baku district in southeastern Russia, has at once the record of the largest production in Europe and the prospect of far greater future production. The proved area from which the large output has come covers only a few thousand acres, but the prospective area covers thousands of square miles. The Grosny field, on the north flank of the Caucasus has also produced a large quantity of oil from a small area ar

promises still further production. In both the Baku and Grasny fields the productive sands are of lower and middle tertiary age, and the structure and other natural conditions are well enough known to justify the expectation of increased yield under improved political and economic conditions. Other areas in Russia, including the western part of the Donetz basin, appear to have favorable structure and formations and to offer fields that invite tests.

"The nearest, apparently the richest, and the most accessible of the Siberian deposits are those in the 200-mile belt, including groups of oil seeps, some of which form small pools, asphalt deposits, and gas springs, that lies on the east side of northern Saghalien (Sakhalin). These deposits occur in late tertiary and pleistocene deposits, apparently under stratigraphic and structural conditions comparable with those on the west side of San Joaquin Valley in California. Concerning the areas of oil indications in the older tertiary formations of Kamchatka and in the trans-Baikal country few geologic details are available.

"The very promising regions of Ferghanaland and Transcaspia, in Southwestern Siberia, are accessible by rail and water transportation, but the true pioneer spirit with adequate backing may be needed to obtain important holdings in these territories when political developments make exploitation possible, and indeed the first steps by American capital should be taken now to investigate existing concessions.

"No oil territory in British India is open to American companies, and the oil lands in the Dutch East Indies, which contain valuable oil reserves, must be developed under Dutch management. The dominant position of the Shell-British interests in this region requires that a successful American operation must be in strong hands.

"The exclusive monopoly of the development of the oil resources in that part of New Guinea which is under the mandate of Australia has already been granted to the Anglo-Persian Oil Company.

"American interests will find an open door in Portuguese territory, like Timor, but here again promptness of action is of paramount importance.

"The situation as to the possibilities of oil-field development by Americans in the mandatory countries that constitute Asia Minor remains to be determined. This region is destined to furnish a large part of the world's oil supply. Whether any concessions additional to the prewar concessions held by an American company in Palestine will be granted to our nationals remains to be seen. It is understood that the northern provinces of Persia, not included in the original D'Arcy (Anglo-Persian) concession, are now covered by concessions granted to a subsidiary of that company.

"In Algeria extensive oil seepages are said to be found in complexly folded tertiary rocks occupying an area of about 2700 square miles north and south of the Cheliff River. The present small output comes from a concession held by a French subsidiary of Pearson's. In Morocco notable oil seepages occur in several areas in the northern and northwestern parts of the French zone."

The Actual Production

In actual production of oil, the figures for 1920 are the latest available, and these are mere estimates for the fields of Russia, as well as France and Germany.

In United States barrels of 42 gallons, the world production for that year was as follows:

United States	443,402,000
Mexico	159,800,000
Russia	30,000,000
Dutch East Indies	16,000,000
India	8,500,000
Roumania	7,406,318
Persia	6,604,734
Galicia	6,000,000
Peru	2,790,000
Japan and Formosa	2,213,803
Trinidad	1,628,637
Argentina	1,366,926
France	700,000
Egypt	1,089,213
Venezuela	500,000
Canada	220,000
Germany	215,340
Italy	38,000
Total	688,474,251

MR. GEORGE OTIS SMITH

"The proved area of several Far Eastern fields includes only a few thousand acres, but the semi-proved area covers thousands of square miles," says George Otis Smith, director of the United States Geological Survey.

The situation in Russia, under Soviet rule, is indicated by the following table, from the Russian Division of the Bureau of Foreign and Domestic Commerce:

Periods	Production Barrels	Shipments Barrels	Employees. No.	Wells No.	Wells being dr'd No.	Total amt. drill'g Feet
1913	8,839,100	.....	a6,534	b229	..	206,374
1917	12,937,900	8,687,200	10,265	393	..	127,498
1918	3,026,000	592,700	2,206	41	..	140
1919	4,528,600	3,422,900	1,746	43	..	252
1920	5,745,300	6,241,700	....	....	..	.....
January	262,100	66,500	1,699	66	1	.....
February	227,500	110,200	1,724	72	4	140
March	258,200	92,800	1,836	65	4	210
April	148,700	180,000	2,014	67	6	154
May	208,900	347,800	2,397	71	6	609
June	469,800	796,100	2,723	72	6	917
July	484,700	893,100	2,846	79	6	847
August	710,300	647,700	3,050	97	6	770
September	757,800	799,700	3,080	99	7	693
October	795,800	780,000	3,075	101	7	700
November	719,500	759,800	3,098	103	6	700
December	702,000	768,000	4,006	101	7	686

aThe number of employes in the Grozny fields was stated to be 7,572 in Supplement to Commerce Reports No. 13a, Nov. 3, 1919, p. 19.

bThe number of producing wells at Grozny in 1913 was given as 278 and 351, according to different authorities, on p. 1451 of Commerce Reports for March 14, 1921.

A gusher in Mexico of past year

Conclusions

If present data are to be relied upon, and if the demand of the next few years for petroleum keeps pace with its development over the past ten years, additional sources of supply will have to be obtained, and that in considerable volume.

These sources of supply are varied, about half of the known deposits of petroleum being in the two Americas. Much of the prospective oil land of South America will not be exploited, however, until present known fields in other continents are developed more fully.

Northern South America affords the best prospecting area at the present time. Southeastern Russia and Siberia should logically be developed by Americans, with stable political conditions there.

Present known fields of Russia, East Indies, India, Roumania and Persia can more logically be drawn upon in the immediate future for augmenting supplies of oil, in case these supplies are needed, provided the political situation within these countries becomes settled, and provided further that an open door policy is established, under which the nationals of all countries may prospect for oil.

The most important oil question of this age, and one which will affect future generations to a greater degree than any other, is the question of whether or not the countries of the Far East will be made available for the operation of American and other foreign companies.

With the present political conditions existing in all the countries where known oil reserves are located, there is no possible danger of such reserves creating a menace to the domestic oil situation.

Chicago, Ill., Jan. 18.—The Peoples Gas Light and Coke Company of this city will accept the Illinois Commerce Commission's ruling ordering a decrease in gas rates, but will seek relief in the state courts, according to a statement given out by Samuel Insull, president of the company. The new rates will become effective February 1, and will be $1 for each thousand cubic feet to the home consumer, 95 cents to small manufacturer and shop keeper, and 90 cents to the wholesale user.

The order was entered by the Illinois Commerce Commission January 12, and affects about 700,000 patrons of the Peoples Gas Light and Coke Company.

Washington, D. C., Jan. 16.—New York advices are that John D. Rockefeller has sent his check for $391,968.38 to cover the amount he owed as taxes on income from oil pipe lines in accordance with the recent ruling of the Supreme Court in the matter. The check was sent to the Federal Building in New York by Mr. Rockefeller.

Possibilities of Chemical Research in Producing Branch of Oil Industry

By H. H. Hill

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MOST people appreciate the necessity of chemical research in a strictly chemical industry, such as the manufacture of dyes, because the different dyes are chemical compounds and the control of their manufacture is a chemical problem. Chemists must be employed, therefore, in order to manufacture a varied line of products with uniform qualities. The possibilities for chemical research in a basic industry such as agriculture, mining or petroleum are, however, not so readily apparent. Fortunately considerable chemical work has been carried on in all industries with results that have more than justified the cost of the investigations.

In the past a large proportion of the chemical work in petroleum has been done in connection with refining. The oil refiners found it advisable to employ chemists in order to maintain the uniformity of their products and to discover new products. The application of chemical work to the producing and marketing branches of the oil industry has not been understood and in fact few producers or marketers could suggest ways for chemists to help in solving their problems. The oil producer has been interested in developing new fields, handling properties in the older fields and in getting the maximum amount of oil from the ground in the shortest posible time. Naturally he has not been interested in the work of the chemists nor will he be interested until it has been demonstrated that the chemists can be of service to him. Likewise the marketer has been interested in marketing a maximum quantity of petroleum products of a grade that will satisfy his customers, relying to a considerable extent upon the refiner to supply products of the quality that his customers demand. Until somewhat recently he has not been interested in the work of the chemist, but the marketer is now learning that a staff of technically trained men is necessary to enable him to compete with organizations that employ technical men capable of understanding the types of products best suited for each specific use.

Chemical Work

Although it is not generally realized, considerable chemical work has been done on problems that directly affect the oil producer. Chemical analyses of oil field waters are commonly used in some localities in determining the source of underground waters. Methods developed by chemists for treating oil field emulsions have been responsible for the recovery of thousands of barrels of oil that would otherwise have been wasted. Chemical work in connection with oil well cementing operations has resulted in the success of many cementing jobs, which otherwise would have failed. Examples of work in which the chemist has been or will be of value to the producer are discussed later.

Water is in many cases the oil producer's worst enemy. Water entering an oil well increases the cost of lifting the fluid, may corrode tubing and casing, or form emulsion with the oil, and finally, if not brought under control, will flood the oil sand and completely ruin the property. The successful handling of a water problem becomes of prime interest to the oil producer and is second in importance to the discovery of a new field. Although the work of locating the source of the water and developing methods for shutting it off have been handled by the petroleum engineers, the chemists have rendered valuable service in detecting the peculiarities of the different waters.

In locating the source of underground water the engineer often must rely on the analyses of the different waters as determined by the chemist. In some fields there are usually such differences between the chemical analyses of top and bottom water, that the source of water in a well can be determined by a chemical analysis of a sample. There are, of course, a few fields where there is so little difference between the waters from the different sands that chemical analyses are not of much value.

Much to be Done

A large amount of chemical research on oil field waters remains to be done. In only a few fields in this country has a systematic study been made of the variation between waters coming from different formations, although information of this character would be very valuable to the producing companies. It is possible that water occurring in the base of an oil sand has properties that would distinguish it from water coming from any other sand in the field. If by the use of water analyses it is possible to determine whether the water is coming from an upper sand, from a sand below the oil sand, or whether it is associated with the oil, the problem of shutting off the water will be simplified. Water analysis work may be ultimately developed to the point where water analyses can be used in correlating underground structures, as it seems probable that water occurring in certain formations will have somewhat the same composition as waters occurring in the same formation in other portions of the field.

More work of a chemical nature has been done on methods of dehydrating oil-water emulsions than on any problem affecting the oil producer. In this field of research the chemist has led the way, although in a number of cases the application of chemical processes has been carried out by engineers. The two electrical processes that are most widely used (the Cottrell and Seibert processes) were developed by chemists and are operating successfully on several types of oil field emulsions. A process that makes use of chemicals as a means of separating the oil and water is being used successfully in a number of fields in the country. Other methods such as steaming, centrifuging and filtering are also being used to good advantage in a number of fields.

Subject of Emulsions

There is, however, a decided need for chemical research on the subject of emulsions. Fundamental data should be obtained on the nature of emulsions and reasons for their formation. Extended investigations should be made to determine the effect of salt water and of finely divided materials on the formations of emulsions and to determine the reason that certain processes will satisfactorily break emulsions from certain fields, but can not be used to good advantage in treating emulsions from other fields. A method is needed for treating the emulsions that are formed on properties that produce only a few barrels daily. If a method could be developed for economically treating small quantities of emulsified oil, thousands of barrels of good oil could be recovered from the small properties in the Mid-Continent field alone.

The corrosive action of underground waters on casing, tubing, pumping equipment, lead lines, etc., is responsible for losses totaling several thousand dollars annually. In some fields the water is particularly corrosive and in most fields it is responsible for numerous difficulties. In the El Dorado field, Kansas, the tubing in some wells is badly corroded after being in the well only sixty days and frequently one side of the casing will be almost completely eaten away in two or three years. In one of the fields in Oklahoma, a company reports that it is necessary to replace the damaged joints of casing every two years and to replace part of the tubing every ninety days.

Various methods have been tried for preventing corrosion, but in most cases they have been only partly successful. The casing and tubing have been painted with asphalt paint but in most cases this method has not been successful for the reason that in lowering the casing or tubing into the well enough paint is scratched off to allow corrosion to take place. Galvanized casing and tubing have been used with only partial success. One company has made use of alkali muds, mixing the muds with sodium carbonate or sodium hydroxide and placing the mixture between the casing and the wall of the hole. This method has given fair satisfaction and is worthy of a more detailed study. It would not be of much value, however, in case the corrosive water is coming up inside the casing. One of the companies operating in Kansas is now coating the tubing with zinc in the hope that zinc being more active chemically than iron, the water will act on the zinc in preference to the steel and thus lengthen the life of the tubing. Each joint of tubing that extends into the fluid is coated with zinc one-half inch in thickness for a length of about two feet. This method is now being tried out but sufficient data are not available to show whether or not the process will prove generally successful.

Cast Iron Casing

As a last resort, some companies are experimenting with cast iron casing, but due to the excessive weight it has not been highly successful. Attempts have also been made to prevent the corrosive action of underground waters by neutralizing the water with alkalis, but due to the large volumes that must be treated this method does not offer much promise. The Pittsburgh Station of the Bureau of Mines is carrying on some work in connection with the corrosive action of mine water that may give results that will be of value in preventing the corrosion of casing and tubing.

Since the oil producers' troubles are caused largely by water entering the well it is evident that efforts devotad to shutting off the water will in general serve a fourfold purpose: an increase in oil production, the cost of lifting the fluid will be reduced, the emulsion formed will be reduced to a minimum and there will be less trouble from corrosion. In this work the engineer will predominate, but the chemist will be able to render valuable aid. The most effective method for shutting off water is by the use of cement. It is not always easy, however, to make an effective shutoff for frequently the cement will not set. Several operators in the Mid-Continent field have not been successful in shutting off water by the use of cement and for that reason have condemned the method. It is very possible, however, that the failures were due to using a grade of cement that was not suited for the purpose, or that the cement was agitated with either gas or water before it had time to set. Cementing operations have been successful in other fields and a number of successful jobs have been done in the Mid-Continent field.

Hydraulic Lime

Considerbale work has been done by chemists for one large company on the use of hy-

Methods of Treating Lubricating Oils

Important that all water be removed before the refining process begins

By A. E. Peterson
Manager Keen & Woolf Oil Company

IN treating any oil with acid, be sure and have no water in the oil if possible. If the oil has water in it when it goes to the agitator, it will be necessary to take the water out of it with a small dump of acid (1 pound of acid to 1 barrel of oil). Sometimes it requires a number of small dumps of acid to get all the water out of the oil. These dumps are called cuts, or water acid dumps.

Five or ten minutes is usually long enough to agitate the oil on the water acid dump, then settle from one to three hours. If it settles all water and no fresh sludge it is best to keep on giving it small water acid dumps until it brings down some pitch or sludge and no water; then you will know that it is free from water, or dry, and ready for the main dump of acid that will cut all the pitch out of the oil and make a good color.

Sometimes it is better to split up the main dump into two dumps for color; you can tell better after getting acquainted with your oil.

After the main dump has blown for about twenty or thirty minutes, filter a sample through sawdust, or break it down with water or caustic if it will not filter bright. You can tell then what color your batch is.

If your oil is not up to color add more acid and try another sample for color. When you have the desired color, break the batch down with water, caustic soda, or soda ash. If the oil settles quickly, it is best to break with water. In breaking a batch down add water until the pitch gathers in lumps as does butter in churning.

A heavy oil that has much pitch in it will gather in lumps about the size of a pea. A lighter oil that has less pitch in it gathers in smaller lumps and takes more water to break it down.

A 50 viscosity oil usually takes a lot of water to break it down and gathers in lumps the size of a pin head. Three hundred viscosity oil or heavier, takes less water and breaks in larger lumps. It is usually necessary to let settle for from three to six hours after breaking down before you transfer to the wash agitator. Keep drawing off the pitch while settling so it will not get hard in the agitator cone.

When the oil is well settled down after breaking, transfer to a clean wash agitator that has no pitch in it. After transferring neutralize with soda ash or caustic soda. It is usually best to neutralize with as weak a solution (less than one Beaume) as possible. If the oil is not thoroughly neutralized it will turn black on the heat. After the acid is killed, let it settle from three to six hours and draw off all the dead acid and lye, then wash with hot water until it is entirely free from sediment.

Do not make the water or oil any hotter than is necessary to settle good. After it is washed clean and the water has all settled and been drawn off it is ready to blow bright. Do not make it too hot in blowing bright as the oil usually gets darker as the heat is applied.

draulic lime in place of cement. Hydraulic lime is not as strong as cement but it sets to better advantage while being agitated with gas or water. In a number of tests, hydraulic lime was used to line the wall of the hole and cement was introduced afterwards. This method gave very good success as the hydraulic lime stopped the agitation and gave the cement a chance to set. As an example of the use of hydraulic lime—at one well in Wyoming difficulty was encountered in getting the cement to set. The casing was pulled and the cement was bailed out. Fresh water was hauled in and mixed with five or six sacks of hydraulic lime which was placed in the well ahead of the cement. This resulted in a successful cementing job.

There is need for a large amount of research work in connection with the use of cement for shutting off water in oil wells. A thorough investigation should be made of the effect of salt water on the rate at which cement will set, tests should be made to determine the influence of different chemicals on the rate of setting and uniformity of the set and finally, if it is found that the grades of cement now on the market are not satisfactory under all conditions, efforts should be devoted to developing cement that will meet specific requirements. In this work it must be kept in mind that for oil well purposes cement must be mixed thinner than for surface work, as it must be pumped or otherwise handled as a fluid. Forty pounds of water and one hundred pounds of oil well cement give a mixture about as thick as can be pumped conveniently.

Mud-Laden Fluid

There is a broad field for chemical research in connection with the use of mud-laden fluid for shutting off gas, water or oil. Mud-laden fluid when forced into the formations will, in many cases, successfully confine the gas, water and oil to their respective strata so that the well can be drilled to the deeper productive oil sands. The chief difficulty in the use of mud- laden fluid has been to get a mud that was heavy enough for the purpose and at the same time was of such consistency that the pumps could handle it without difficulty. Some preliminary tests on the effect of adding certain chemicals such as alkalis, have shown the possibility of obtaining muds of high specific gravity, but sufficiently liquid to be handled without difficulty. Additional work along this line would be valuable for if heavier muds that are very liquid can be obtained it will mean that more effective shutoffs can be made as the mud can be forced further back into the formation. The application of colloid chemistry to the study of mud-laden fluid should yield information that will be of value to the oil producer.*

There are a number of other problems that directly affect the oil producer and that offer exceptional opportunities for chemical research, such as, the removal of paraffin and waxy substances from wells, the use of dyes for determining the movement of underground waters, and the removal of inorganic precipitates from the pores of the sand. These precipitates may have been deposited by waters of different chemical composition coming in contact with each other and if not removed they will materially affect the production of the well.

It is evident, therefore, that the possibilities of chemical research are not limited to the refining and marketing branches of the petroleum industry, but that the oil producer is confronted with a number of problems that await solution by chemically trained men.

*For detailed information on water problems in the oil fields and on the use of cement and mud-laden fluids, the reader is referred to the following publications of the Bureau of Mines: Bulletin 195, Underground Conditions in Oil Fields, by A. W. Ambrose; Bulletin 163, Methods of Shutting Off Water in Oil and Gas Wells, by F. B. Tough; Bulletin 134, The Use of Mud-Laden Fluid in Oil and Gas Wells, by J. O. Lewis and W. F. McMurray.

SALT DOMES OF TEXAS AND LOUISIANA

(Continued from page 11.)

that have proven commercially productive to date.

It seems safe to assert that of the remaining 11 domes, at least 9 will come into production at some time in the future—probably within 20 years—and it is easily possible that the entire 11 may in the end prove productive.

The percentage of productive domes to the total known domes is 33 per cent—20 out of 61.

The following two tables will afford some interesting data in regard to the rate of new discoveries:

Discovery of Domes

Year	No. Localities Producing	Discoveries New Fields	Discoveries New Domes	Discoveries New Sands, Old Fields
1901	3	3	15	0
1902	6	3	7	0
1903	7	1	3	0
1904	8	1	3	0
1905	9	1	0	0
1906	9	0	1	0
1907	9	0	0	0
1908	11	2	2	0
1909	11	0	0	0
1910	12	1	0	0
1911	12	0	1	0
1912	12	0	1	0
1913	14	2	4	0
1914	14	0	0	*2
1915	14	0	0	0
1916	14	0	0	0
1917	17	3	2	†1
1918	18	1	0	0
1919	20	2	0	0
1920	20	0	0	0
1921	21	1	0	‡1
			39	

*Sour Lake, Humble. †Goose Creek. ‡Orange.

Discovery of Fields

Year	Field	No.
1901	Spindletop, Jennings, Sour Lake	3
1902	Anse La Butte, Welsh, Saratoga	1
1903	Batson	1
1904	Humble	1
1905	North Dayton	1
1906		0

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Plants in PENNSYLVANIA and ILLINOIS

73B

REFINERY STATISTICS FOR 1921 BY MONTHS

(United States Bureau of Mines)

OUTPUT OF REFINERIES, JANUARY TO OCTOBER

	Crude Run (Bbls.)	Re-run (Bbls.)	Gasoline (Gals.)	Kerosene (Gals.)	Fuel, Gas Oil (Gals.)	Lubricants (Gals.)	Wax (Lbs.)	Coke (Tons)	Asphalt (Tons)	Misc. (Gals.)	Loss (Bbls.)
January	39,637,382	4,206,576	406,432,439	205,374,611	836,684,040	85,908,641	45,659,668	57,961	80,672	145,846,215	1,664,203
February	34,588,096	2,942,666	388,188,232	163,081,918	732,542,415	72,432,219	40,384,408	55,029	74,508	120,075,769	1,440,377
March	35,509,115	2,788,737	419,795,390	169,247,894	758,334,681	73,003,304	37,719,575	45,475	84,774	85,849,195	1,575,538
April	37,594,220	2,363,193	426,215,200	156,156,565	813,444,202	76,456,958	39,200,197	51,386	86,120	96,017,271	1,699,652
May	36,990,478	2,823,694	448,567,873	145,225,023	817,367,590	70,000,194	31,441,634	49,891	102,327	84,823,852	1,573,090
June	36,940,821	2,740,831	430,344,393	141,637,081	826,355,262	63,088,609	29,860,281	43,567	109,563	100,049,466	1,546,123
July	36,043,797	2,649,364	419,641,815	138,724,132	807,428,397	65,983,228	25,070,736	43,496	111,523	83,999,461	1,610,271
August	36,043,910	2,705,120	431,577,195	143,652,290	784,450,485	66,473,473	28,498,408	42,602	112,943	92,463,702	1,596,083
September	35,613,933	2,999,042	416,913,000	154,017,299	788,408,124	69,053,367	33,054,167	44,863	107,420	83,050,575	1,638,549
October	37,968,496	3,727,351	440,955,518	182,453,598	833,775,254	75,971,377	38,264,778	52,368	153,118	93,656,968	1,796,781

STOCKS AT REFINERIES CLOSE EACH MONTH

	Crude Oil (Bbls.)	Gasoline (Gals.)	Kerosene (Gals.)	Gas & Fuel Oils (Gals.)	Lubricating (Gals.)	Wax (Lbs.)
January	21,064,124	571,983,793	418,747,781	807,895,498	183,813,205	217,983,072
February	22,411,819	680,540,351	430,045,193	993,127,328	201,627,558	234,456,284
March	21,147,257	713,043,480	446,367,188	1,005,317,939	223,414,093	341,497,529
April	21,054,630	747,222,900	458,666,896	1,056,484,544	249,593,330	256,254,892
May	20,816,203	800,495,787	452,437,995	1,163,388,695	261,759,797	266,233,119
June	21,008,986	750,644,450	435,056,713	1,248,644,088	260,883,121	261,328,486
July	19,115,631	684,239,695	412, 01,674	1,269,419,283	258,638,298	260,891,035
August	16,374,050	567,645,548	389,893,421	1,243,445,980	242,530,090	244,111,173
September	17,991,036	515,325,998	371,235,034	1,229,254,127	230,227,413	237,421,155
October	18,404,182	456,269,659	334,579,774	1,238,269,365	216,770,320	223,013,334

1907		0
1908	Goose Creek, Markham	2
1909		0
1910	Vinton	1
1911		0
1912		0
1913	Edgerley, Orange	2
1914		0
1915		0
1916		0
1917	New Iberia, Damon Mound, West Columbia	3
1918	Hull	1
1919	Barber's Hill, Blue Ridge	2
1920		0
1921	Pierce Junction	1
	Orange (Deep sands)	—
Total		21

Large Production

The salt domes are unique in another respect—and that is the large production per acre. No other field in the United States can compare with them in this respect.

The following table shows the recoveries per acre of the more important productive domes:

Production per Acre Gulf Coast Domes to January 1, 1921

	Barrels
Jennings, 142 acres	223,395
Spindletop, 265 acres	177,606
West Columbia, 140 acres	134,904
Sour Lake, 450 acres	130,869
Vinton, 140 acres	111,301
Edgerly, 76 acers	77,194
Batson, 477 acres	63,636
Saratoga, 450 acres	45,641
Humble, 2225 acres	38,062
Hull, 974 acres	6,545
Damon Mound, 358 acres	6,185

Compare these figures with those of the following from typical fields in other portions of the United States:

	Per Acre Recovery Barrels
Bartlesville (Okla.)	1,800
Glenn Pool (Okla.)	7,500
Cushing (Okla.)	11,000
Healdton (1 property)	29,450
Caddo, (La.) (1 property)	44,800
California (Average)	11,723

A Few Questions

Now to attempt to answer just a few of the questions that are often asked in regard to salt domes:

First, what is a salt dome? Well, briefly, it represents a place where a core of solid rock salt has been intruded into the surrounding strata, tilting these strata at a high angle round the sides. The salt is generally flat on top, with steep sides, varying from 45 to 90 degrees, with steeper dips the more common.

The diameter may vary from one-fourth to one mile. It rarely exceeds two miles. The area of the disturbed condition, affected by the salt intrusion, is generally less than three miles in diameter.

The top of the salt may reach to within 400 or 500 feet of the surface, or it may be buried at unknown depths. At Humble, Spindletop and Sour Lake the top of the salt is reached at from 1000 to 1400 feet. At Pierce Junction and Blue Ridge it occurs within 500 to 600 feet of the surface. At Orange, Goose Creek and Edgerley, the salt—if there be any at all—has never been reached by the drill.

The salt in the coastal domes is nearly always capped by a mass of porous, cavernous limestone which in turn lies on top of a mass of gypsum or anhydrite.

The oil of the domes occurs in sands lying above the cap rock, in the cap rock, or in the highly inclined sands lying against the sides. The first is the shallow oil; the second oil of medium depth; the third, the deep oil.

Not all of the domes have oil at all three levels. Humble is an example of a dome with oil at the three levels; Hull, Pierce Junction and Damon Mound are examples of domes with oil in the deep sands only.

How a Dome Looks

What does a dome look like at the surface and how may it be recognized?

It would seem that places where the earth had been as greatly disturbed as is the case where the salt domes occur—with the salt puncturing the strata for 10,000 feet or more—that there would be some considerable evidence of this disturbance at the surface. Yet as a matter of fact, the average layman, were it not for the derricks around one of these domes, and the oil coming out of the ground, would be unable to detect in many instances anything peculiar to these spots, especially in the country bordering the coast.

In a number of cases, the underground domes are marked by rather pronounced topographic mounds at the surface, and in these places the fact that a salt dome is present may be fairly evident to the inexperienced eye. Damon Mound, Big Hill in Jefferson County, Belle Isle in Louisiana, are all cases where such a topographic mound is present that a bold underground disturbance would be suspected.

On the other hand, Goose Creek, Humble, Orange, South Dayton and others are places where there is no topographic feature to identify the underground structure.

In the case of most of the productive domes, escaping petroleum gas, and deposits of "paraffine dirt"—a substance formed by the escape of petroleum gas—have led to the recognition of the domes. Goose Creek, Humble, Batson, Orange, Markham and others were discovered on the basis of these indications.

New Domes

Are we going to find many new domes in the future, or have we already found them all?

Yes, there are doubtless domes yet to be discovered, but they will not be found as easily or as fast as has been the case in the past.

Of the 39 known domes in the eastern Gulf Coast district, 15 were recognized in the year Spindletop was discovered, and 7 the following year. Twenty-two were recognized within a year after the discovery of Spindletop, and 28 of the 39 were known within three years after this discovery. No new dome has been discovered since 1917 when two were identified, and prior to that none had been discovered since 1913, when four were identified.

It will require in most instances deeper drilling, and drilling in spots heretofore regarded with indifference to discover the new domes, and the new discoveries are apt to occur at a lesser rate in the future than has been the case in the past.

What side of a dome is most likely to have deep oil?

The answer is, oil may occur on any side of a dome, with chances favoring the east and south sides. At Humble, most of the deep oil occurs on the east and south sides; at West Columbia it is on the east and north sides; at Damon Mound it is on the southwest side; at Sour Lake it is on the northwest side. But Humble, Hull, West Columbia, Vinton, Blue Ridge, Pierce Junction, are all cases where the oil is present in greatest quantity on the east side.

Lowest Limit Not Reached

Has the lowest limit of production been reached around the domes?

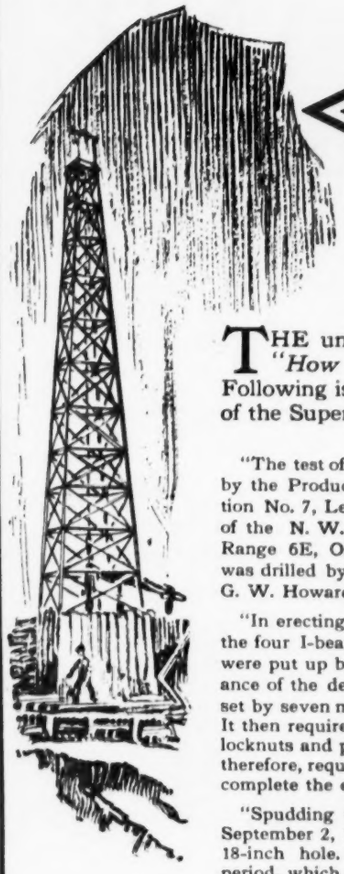
The answer is no. It is probable that the next decade will witness the exploitation of sands at 5000 and 6000 feet around the domes, and sides hitherto regarded as barren, and lands which were heretofore regarded as too far removed from the periphery of the dome, will under the stimulus of deeper drilling, contribute to the production of the future, when the shallower sands will have been exhausted.

Numerous other questions might be asked, and answers attempted, but their discussion will have to be reserved for some future date, when more space shall be available.

Estimate on World Production Covering Nineteen-Twenty-One

The production of several foreign countries during 1921 is estimated by The Financial Review of January 14, as follows:

	Barrels, 1921
Mexico	175,000,000
Persia	25,000,000
Russia	20,000,000
Dutch E. Indies	20,000,000
Roumania	8,000,000
India	8,000,000
Poland (Galicia)	6,000,000
Peru	2,750,000
Japan	2,100,000
Others	7,000,000
Total	273,850,000



STEEL SUPERIOR DERRICK

THE universal question asked by prospective buyers of steel derricks is this: *"How has this particular make of derrick actually performed in the field?"* Following is the report of Mr. James A. Thomas, Engineer, who watched the field test of the Superior Steel Derrick, from the erection of the derrick to the pulling of the pipe:

"The test of the Superior Steel Derrick was made by the Producers & Refiners Corporation, at location No. 7, Lease No. 334, being the N.W. corner of the N. W. ¼ of Section 31, Township 27N, Range 6E, Osage County, Oklahoma. The well was drilled by the Crosby Drilling Company, Mr. G. W. Howard, General Manager.

"In erecting the derrick, the bottom leg segments, the four I-beam girts, and the first section complete were put up by six men in three hours. The balance of the derrick was run and the crown block set by seven men in five hours and fifteen minutes. It then required one man 9½ hours to tighten the locknuts and put the clamps on the braces. It will, therefore, require but a day for a crew of six men to complete the erection of derrick.

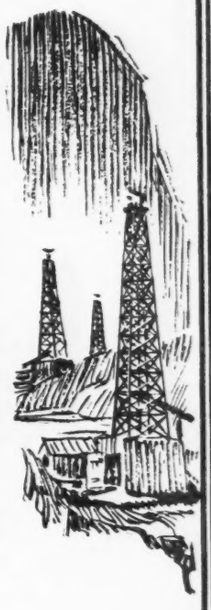
"Spudding was commenced at 6 p. m., Friday, September 2, 1921. The well was started with an 18-inch hole. Throughout the entire spudding period, which lasted until noon of September 8, during which time 378 feet of hole was made, in limestone of the hardest character, the action of the derrick was entirely satisfactory. The stability of the bullwheel shaft was especially remarkable. Under full load the shaft would move only approximately one-quarter of an inch in the direction of the resultant force, while in a wooden derrick the shaft sometimes moves an inch or more. The verticle flexibility of the derrick was noticeable each time the tools were lifted. The bailer, suspended from the crown block on the sand line, would be lowered a fraction of an inch and would return to its original position when the load was released. The action of the bullwheel posts and bearings was most commendable, and when the tools were let down there was practically no vibration, while in a wooden derrick the vibration is sometimes intense. This condition maintained throughout the entire test.

"The 18-inch hole was drilled to 790 feet and the 15½ inch casing set at that point. The derrick handled the casing perfectly and, although the total load was only 27 tons, there was no evidence of any strain. The 15½ inch hole was drilled to 1367 feet and the 12½ inch casing set at that point. This string had to be handled a number of times, as it was necessary to underream the last 300 feet, the hole caving badly. The 12½ inch hole was drilled to 1788 feet, at which point the 10 inch casing was set, the total weight of which was slightly over 40 tons. As this was the heaviest string of pipe to be used and as there was no sign of strain on the derrick, the next severe test was in the pulling of the pipe after the well was completed. The 10 inch hole was drilled to 2361 feet and the 8¼ inch casing set at that point. The top of the sand was found at 2864 feet, and the 6⅝ casing set.

"November 13, the 10 inch casing was pulled and although it was very hard to start, it was handled successfully without the slightest effect on the derrick. The great stress to which the derrick was subjected in pulling the pipe off bottom was evidenced only by the fact that time after time, the engine stalled even with the throttle wide open.

"The 12½ inch casing was pulled November 14. This string was 'frozen' tight and 'collar-bound', and it was predicted by many that the pipe could never be pulled off bottom. Although the weight of this string was 34 tons as compared to 40 tons of 10 inch, the friction and 'frozen' condition made it by far the more difficult to pull. It required about 2½ hours to start the pipe off bottom and many times the engine was stalled with full steam applied. The 'collar-bound' condition presented another very difficult situation, requiring even greater effort than was required to start the pipe off bottom. Throughout the entire time, however, the derrick performed most satisfactorily and at no time was the slightest twist noticeable, nor was there any deformity in the structure.

"The 15½ inch casing was pulled November 15, with equal efficiency, making the test a complete success, and calling forth many expressions of satisfaction and commendation from those who witnessed the pulling of the pipe."



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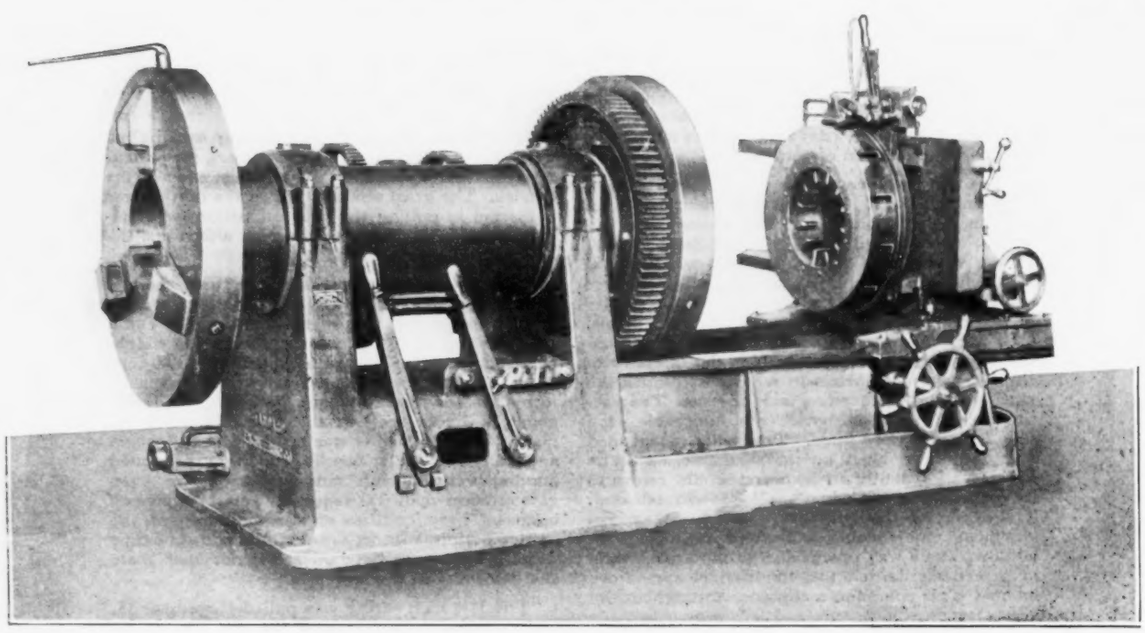

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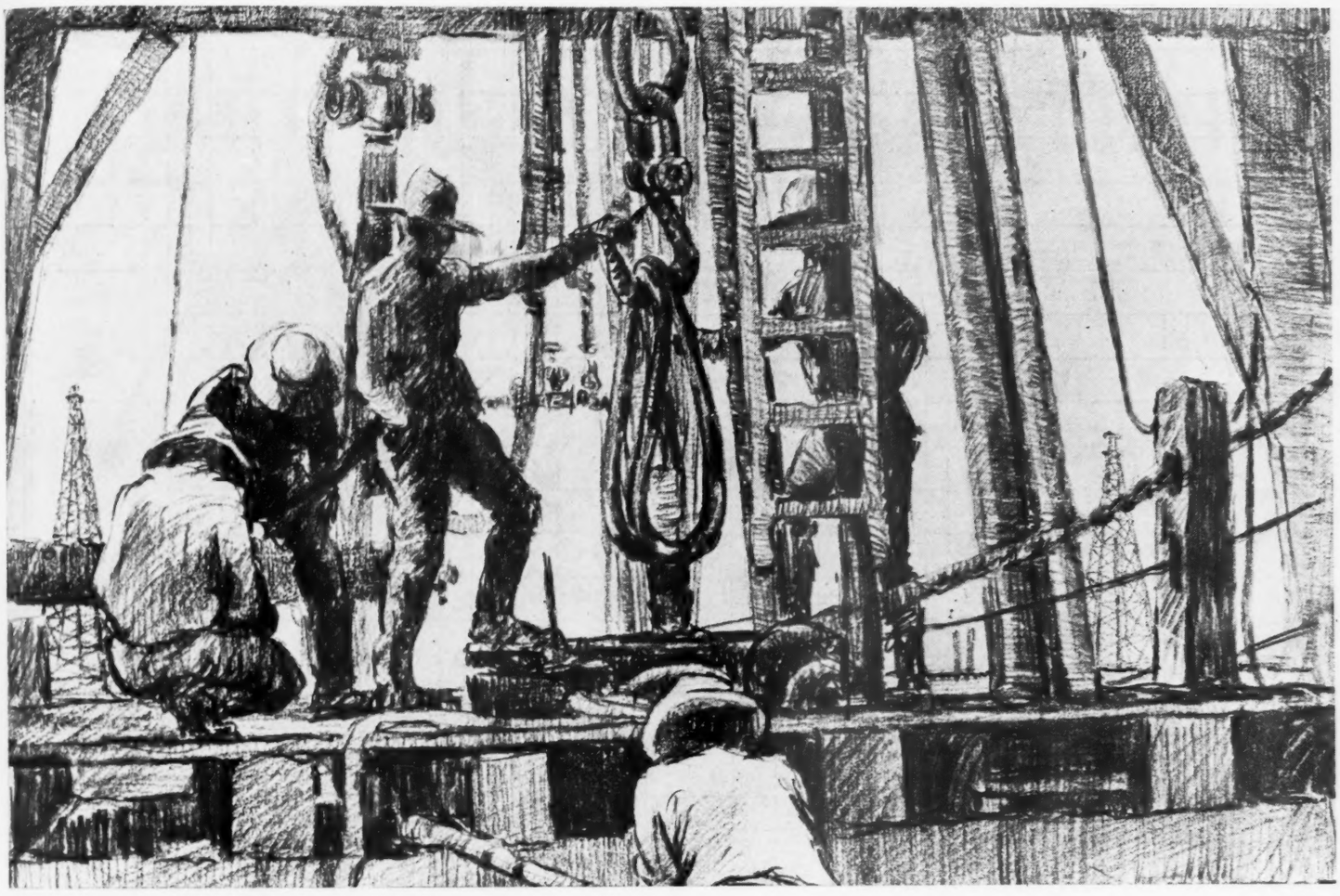


—M. Brisbane.

Leaks in the Oil Fields

In many instances leases could be operated at less cost and many wells are very costly

By Leon J. Pepperberg

IT IS a pleasure to discuss the achievements which have been made throughout the various branches of the petroleum industry, but it is characteristic to let our enthusiasm blind us to our imperfections so that at times our moderate success is too costly.

The subject of "leaks" in the industry is important even though it is necessarily an unpleasant one.

The old fallacy, namely, the oil industry is independent of all other industries, of the condition of the world market, foreign credits, interest rates, taxes, transportation rates, wages, cost of material, efficient management, etc., and that in spite of abuse this business will earn a profit, must be swept aside.

The petroleum industry is subject to all the ailments of the major industries. Owing to its hazardous nature this business is exposed to many sources of losses which do not have to be contended with in most major industries.

While marked progress has been made throughout the industry during the past few years, those conversant with conditions admit there is considerable room for improvement.

Space available will not permit detailed discussion of the many economic factors which have a direct bearing on the petroleum industry or the numerous avoidable losses to which it is exposed.

Bad Customs

No originality is claimed for the following notes. They are presented with the hope that they will cause the abandonment of some bad customs, stimulate efficient methods and necessary research and encourage published discussions on similar subjects.

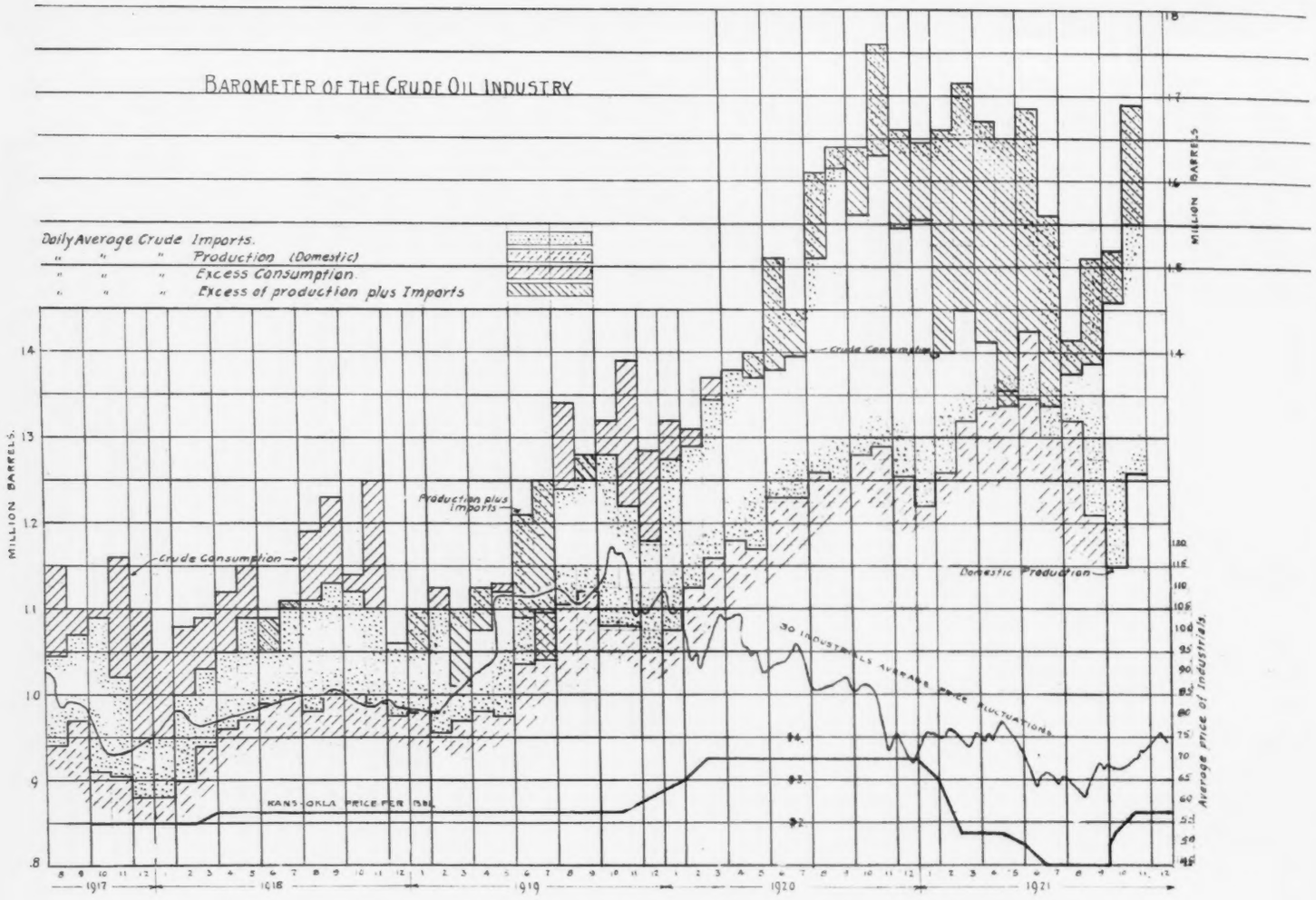
The graphic presentation of statistics and data—the instant visualization of conditions—has become a necessity to the busy executive who cannot spare the time required to study and interpret a vast accumulation of data. Graphically presented data, based on mature judgment will point conclusively to the pathway of developments of the new year. It will suggest many practical ways for cutting costs, straightening out managerial, equipment and labor kinks and plugging unnecessary leaks.

An example of the graphic presentation of statistics is the "Barometer of the Crude Oil Situation" (Fig. 1). The statistics of the United States Geological Survey, American Petroleum Institute and The OIL WEEKLY were used for domestic production, crude imports and domestic consumption. The columner graph is used in preference to the pointed curve commonly used, because by its use the excess production or consumption is indicated in the exact month in which the excess occurred and the volume of excess is indicated by the area of the column for the month.

Graph is of Value

A graph of this sort is of value only in showing the relation of domestic production to imports and consumption. It does not indicate why stocks of crude increase or diminish, why the price of crude rises or falls, or the relation of available storage capacity to daily production. It is necessary then to plot several series of other data against this graph to arrive at logical conclusions for practical purposes.

An index to the prosperity of the oil industry is found in the fluctuation of the average price of stocks of 30 industrials, consequently a graph of these fluctuations as given weekly on the financial page of the New York Tribune, is plotted against the production, import and consumption data to indicate market conditions, whether it is advisable to increase or decrease production and whether a rise or fall of the price of crude can be looked for. The price fluctuations of stocks is used in preference to that of bonds because they are more



Oil statistics from U. S. Geological Survey, American Petroleum Institnte and The Oil Weekly.
Price fluctuations from the New York Tribune

sensitive and the variation in prices is usually more pronounced.

The average price of 30 industrials for several years prior to the World War, was approximately 58. This then was the base line for industrials when the dollar was worth par in the United States. As indicated, the average price of these stocks increased and decreased proportionately with the inflation and deflation of the purchasing power of the dollar. For 1921, 70 is the base line from which the trend of the market must be read.

It is interesting to note that during the wild riot of speculation of 1919 when the price of Mid-Continent crude advanced from $2.25 to $2.75 per barrel, the domestic production of crude was almost stationary for five months. Preceding this period (during the latter part of 1917 and 1918) consumption exceeded production plus imports. This condition, together with the false boom of 1919, with its attended top prices for industrial stocks, stimulated wildcat drilling and intensive wasteful development in the proven fields. The peak of this industrial debauchery was reached in October, 1919, but many of the wells started during this upward swing, were not completed until 1920. False high prices were forced throughout 1920 and the oil producers continued intensive development in the face of increasing imports, increasing crude stocks and falling prices of industrials. The drastic industrial situation of the last half of 1920 and the first nine months of 1921 found us with factories closed, men out of employment, huge stocks of crude oil and no foreign market which could buy and pay for our product. The answer was inevitable and in the face of these conditions the domestic production was increased from month to month until June, 1921. Had it not been for legislative troubles in Mexico and the fact that a portion of these fields were depleted and ceased producing, 50 cent crude in the Mid-Continent fields would have been a reality.

Sold Cheap

Because of the above and attending conditions millions of barrels of high gravity oil (including the flush production which represents 65 per cent of the total recoverable oil from some of the fields) was sold for $1.00 per barrel. The loss to the producer was tremendous and in many instances, both past and yet to come, a receivership will mark the end of the agony.

There are many sidelights to the above situation which might form material for lengthy discussion. This brief post-mortem must suffice. It indicates a deluge of leaks chargeable to ignorant management which permitted the paying of exorbitant prices for leases and the immediate intensive development of the same, in the face of unfavorable conditions which could have been ascertained had the point of view of these executives been broad enough to study general market and world conditions.

Figure 2 shows graphically some of the results obtained from the development of an oil lease in Eastland County, Texas. This graph is largely self explanatory. It should be noted that 8 of these wells produced approximately 98 per cent of the oil from this lease and that five of this number produced approximately 80 per cent of the total production. While the operation of this lease shows a profit in spite of the fact that 11 unnecessary and unprofitable wells were drilled, a large profit would have been made from its development if only five wells had been completed. This property had the benefit of the flush production. Similar development of other leases, managed by the same producing company in this field, showed a net loss for their total production operations.

Cost $1.02 a Barrel

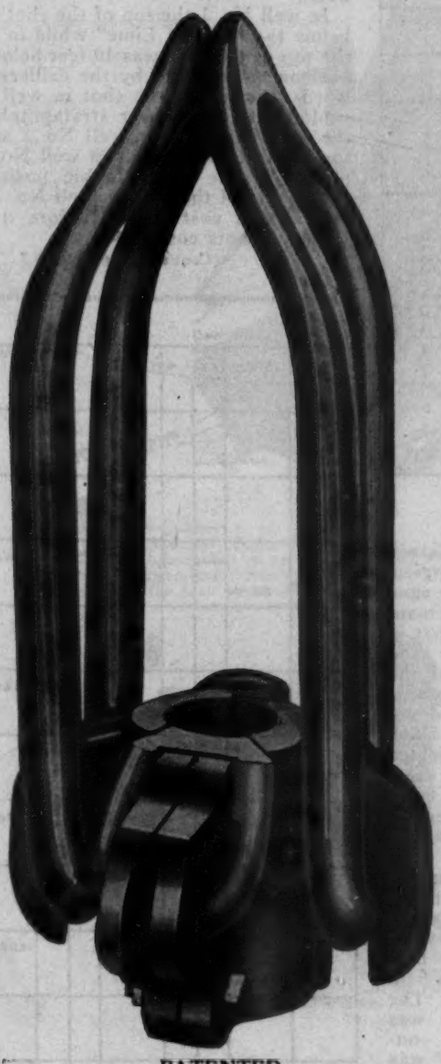
The cost of development for this lease amounted to $1.02 per barrel. The average cost of development for well managed properties in this district was 67 cents per barrel. The cost of production includes operating labor, supplies, teaming, freight, production tax, supervision and pawer. This high cost of production during the second quarter was due to efforts made to stimulate production in wells which had quit flowing. Some of these wells were pulled and plugged during this quarter year.

Unfortunately it seems customary with most industries during periods of retrenchment, to decrease their engineering and scientific forces. This method of supposed economy is usually more costly than is admitted by executives. The most efficiently managed oil organizations maintain a staff of competent engineers, chemists and geologists.

Some of the losses which these departments should prevent are made because there is lack of co-operation between the departments.

The geological department should recommend when it is advisable to continue paying rentals on leases and when it is good business to let the lease lapse. Proper weeding out of

THERE IS ONE ESSENTIAL



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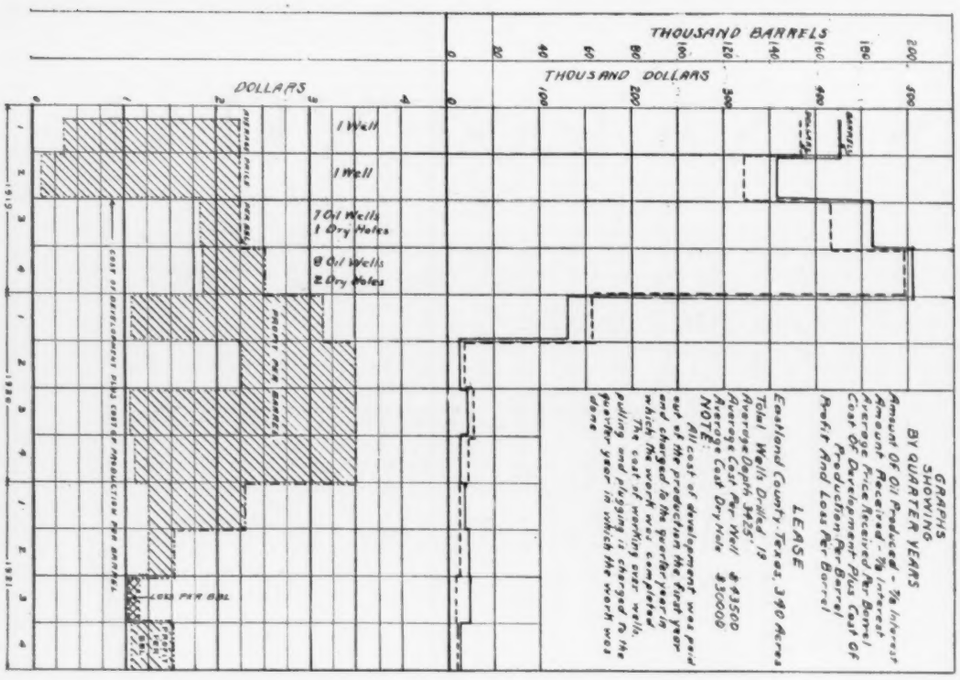

THOUSAND BARRELS
THOUSAND DOLLARS
DOLLARS
1 Well
1 Well
7 Oil Wells
1 Dry Hole
9 Oil Wells
2 Dry Holes
GRAPHS SHOWING BY QUARTER YEARS
LEASE
Eastland County, Texas, 340 Acres
Total Wells Drilled, 19
Average Depth, 3425'
Average Cost Per Well $13500
Average Cost Dry Hole $30000
NOTE:
All cost of development was paid out of the production the first year and charged to the quarter-year in which the work was completed. The cost of working over wells, pulling and plugging is charged to the quarter year in which the work was done
Amount Of Oil Produced - 7/8 Interest
Amount Receivd - 7/8 Interest
Average Price Received Per Barrel
Cost Of Development Plus Cost Of Production Per Barrel
Profit And Loss Per Barrel

Figure 2.

valueless leases will save vast sums in rentals for most of the large operators. The land, geological, production, scout and legal departments must co-operate with each other to obtain efficient results.

"Checker-boarding" a district with leases should be directed by the geological department in co-operation with the scout and land-leasing departments. Millions could be saved in this manner.

From present indications the history of a large part of Mexia oil field and the districts adjacent thereto—as far as oil producers are concerned—will be a repetition of the Ranger region. A sub-surface geological structure map of the Mexia gas field by G. C. Matson and published by the United States Geological Survey, was available when the Woodbine sand was proven productive. Those conversant with conditions in other fields realized that in all probability the structure of the deeper sand would not register exactly with that of the upper gas sand on which Matson's map was based and that subsequent drilling would necessitate a slight modification of the map based on the upper sand. This map indicated the field would be narrow in the deep sand. For several months the large operating companies refused to lease an acre in this region. After the completion of the Desenberg well these same operators went wild. They purchased producing and "close-in" acreage at prices which in most instances prohibited a profit even if the field should yield an average of 20,000 barrels per acre. At present several of these high-priced leases have proven barren and the producing limits of the Mexia field are practically determined by dry holes. The major portion of this wlid speculation was made over the protest of the geologists consulted. Many a "would-be oil company" was caught in the net of optimism woven by the unjustifiable prices paid by major companies, consequently the petroleum industry will suffer from the failures which are bound to follow. Ventures of this sort waste millions of dollars in bonuses, rentals, development costs, pipeline construction, etc., which should logically be paid in dividends to stockholders of sanely managed companies.

LEON J. PEPPERBERG
Geologist and Petroleum Engineer

Figure 3 shows a local condition in Stephens County, Texas. Well No. 1 was drilled to 3191 feet. There was no showing of oil before shooting. The well was shot with 180 quarts of nitro-glycerine and started off at a rate of 1200 barrels per day. This well has produced approximately $550,000 worth of oil since August, 1920.

Well No. 2 is located 1800 feet south of well No. 1. It was drilled by the same contractor who completed No. 1. The contractor and field superintendent assumed that the surface elevation of well No. 2 was 10 feet higher than No. 1. The actual difference in elevation was 25 feet. The same parties assumed that the oil bearing zone lay horizontal between the wells. On this assumption well No. 2 was drilled to 3308 feet. There was no showing of oil before the shots. It was shot with two charges of nitro; one of 200 and the other of 660 quarts. The well failed to respond to either shot.

A study of the well logs showed the formations penetrated could be closely correlated. At six points in the logs, the drillers recorded sands and "hole full of water." When the logs were shifted to correct the difference of surface elevation it was apparent that the strata dipped 20 feet to the south between the wells.

In well No. 1 the top of the shot was 35 feet below the "Top of Lime" while in well No. 2, the top of the shot was 10 feet below the same horizon as recorded by the drillers. In other words, the top of the shot in well No. 1 was exploded 25 feet lower stratagraphically than the top of the shot in well No. 2 and the bottom 15 feet of the shot in well No. 2 was exploded in the stratagraphic position of the top 15 feet of the shot in well No. 1.

This well cost $58,000 before it was shot. The two shots cost $3,440.

(Continued on page 34.)

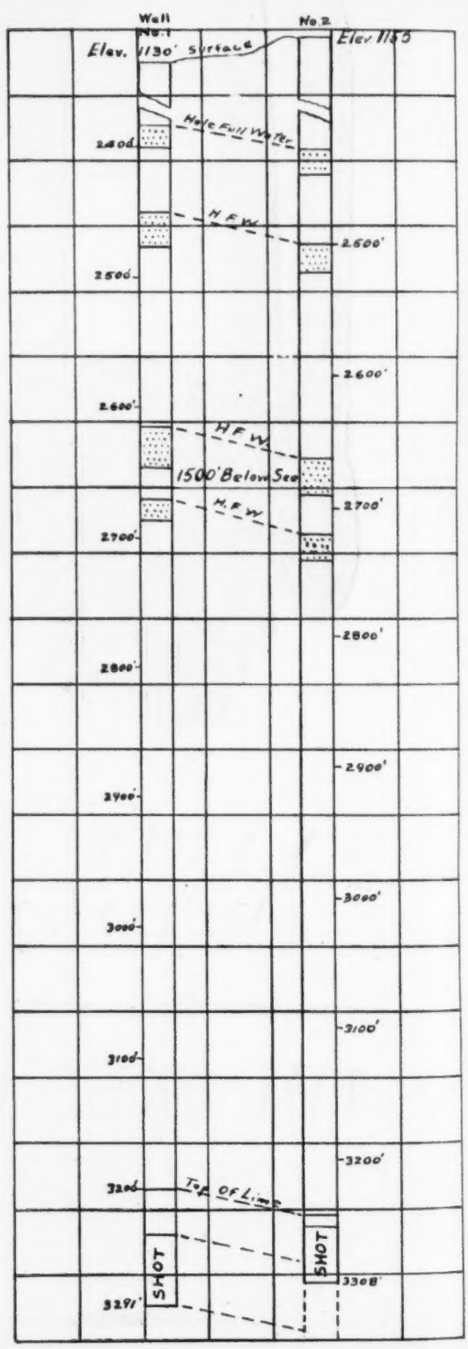
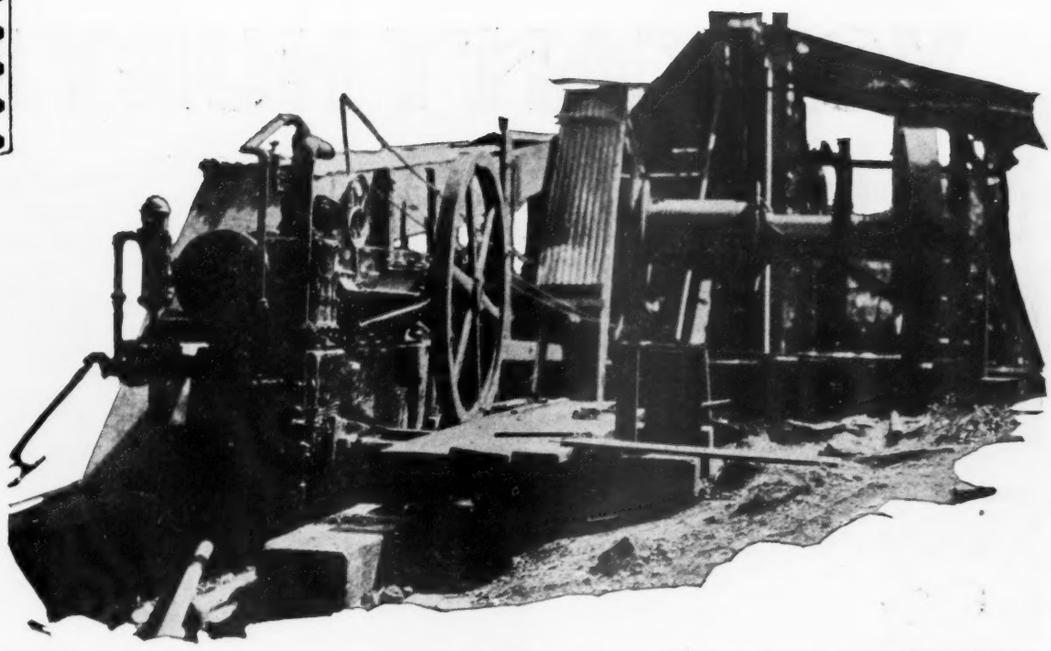


Figure 3.



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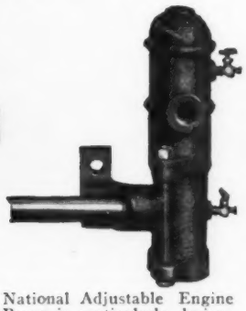

National Adjustable Engine Pump is particularly designed to go with the Ajax Engine. It gives excellent service, is adjustable to all sizes of engine.

AJAX
DRILLING ENGINES

In machine drilling as well as standard cable or rotary you will find Ajax Engines giving satisfactory service—This one is owned by the Oklahoma Central Oil Co. and is located on the Mayberry Farm west of Keystone, Okla.

Strength and simplicity of construction make Ajax Engines the most dependable power units. They have proved their value in every oil field.

There is only one AJAX DRILLING ENGINE.

Genuine Ajax Drilling Engines and Parts are available at all branches of the

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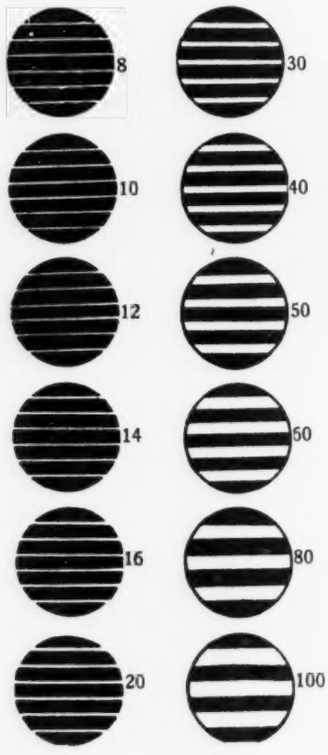
YOU CAN'T HURT IT

Section "McEvoy Wireless"
for Emergency Work
Flush Joint Style

Showing Completed Joint
"McEvoy Wireless" Well Strainer

(Patented)

Showing Meshes
"McEvoy Wireless" Strainer
Openings numbered in thousandths of an inch



"McEvoy Wireless"
and Fittings for
Double String Wells

K—Top Coupling on Wash Pipe
S—Steel Wash and Pull Ring
J—Wash Pipe
P—R. and L. Back-Off Nipple
Q—Left Hand Thread
R—Lead Seal on Coupling
O—Outside Casing
N—Casing Shoe
F—R. and L. Lead Seal Coupling
M—Brass Strainer Plugs
E—Strainer Pipe
I—Bottom Wash Pipe Coupling
H—Bottom Wash Plug—Wood
D—Bottom Coupling
C—Back Pressure Valve
B—Bottom Nipple
A—Drive Shoe

"McEvoy Wireless" Well Strainer for oil and gas wells, and water wells, the world over.

J. H. McEvoy & Company, Houston, Texas

Pacific Coast Branch: McEVOY WIRELESS WELL STRAINER CO., Los Angeles, Cal.

YOU CAN'T HURT IT

Rotate it
Drive it
Spud it
Pull it
Scrape it
Drop it
Bend it

—The only Strainer you know hits bottom in perfect condition.

Section Showing Mechanical Construction
"McEvoy Wireless"

1st—The hole is drilled in the thick wrought pipe——→

2nd—The hole is then reamed to 5/8 inch for two-thirds of its depth, leaving that——→ heavy shoulder. SEE THAT SHOULDER?

3rd—The "McEvoy Wireless" wrought-brass strainer plug——→ is forced into the reamed hole down to that shoulder by heavy pressure, then riveted firmly in place.

SEE THOSE HEAVY CLINCH MARKS AROUND THE STRAINER PLUGS

FOR conditions such as found in the Island of Trinidad, tremendous oil and gas pressure, or anywhere else where heavy pressure is encountered, the McEvoy "*Wireless Screen*" is the only one you can depend on.

Where perforated pipe is used, McEvoy "*Wireless Strainer*" coarse mesh is preferable because you cannot close up a slit whereas a round hole will close or clog.

Put a bit on it and rotate down. This has been done with much success in the Gulf Coast.

SAND TESTED FOR GAUGE WHEN SENT TO US

Send for our McEvoy Wireless pocket sample showing construction and gauges

Casing Pipe—G
Top Coupling on Wash Pipe—K
Wash Ring—C. I. or Wood—L
Wash Pipe—J
Strainer Coupling—F
Brass Strainer Plugs—M
Strainer Pipe—E
Wash Pipe Coupling—I
Bottom Wash Plug—Wood—H
Bottom Coupling—D
Back Pressure Valve—C
Bottom Nipple—B
Drive Shoe—A

J. H. McEvoy & Company, Houston, Texas

Pacific Coast Branch: McEVOY WIRELESS WELL STRAINER CO., Los Angeles, Cal.

Trinidad Apex Oil Company's wells in Trinidad. One of the wells is producing oil. No. 7 is in foreground and is first Trinidad well to use screen. It made 35,000 barrels a day until shut in on account of lack of storage

Trinidad Wells to Have Longer Life

Use of screen is shown to be practical and its use on Island should be universal

THROUGH the proper use of screen, and the handling of tools under heavy pressure through an arrangement of stuffing boxes, the most important obstacle to steady production in the Island of Trinidad has been overcome. Wells on Trinidad, while they have been of immense initial production in the past, have been almost universally short-lived, but the introduction of the screen, properly used, has already proven most satisfactory in one well belonging to the Trinidad Apex Oil Company, Ltd., on Trinidad. That well, completed last August, produced 35,000 barrels a day for a period of two months and is now successfully shut in because storage is full. At the time it was shut in it showed a pressure of more than 500 pounds.

About ten years ago a representative of the Trinidad Apex came to the United States looking for a man to take charge of the company's properties on Trinidad. The company had good acreage, about a mile and a half from the nearest production, and had already developed some shallow wells and one large well. This large well, which, according to estimates from the island, made 100,000 barrels during the first nine hours of its flow, caught fire and burned for a day before doing what all other wells on the island had been in the habit of doing—sanding up.

The representative of the Trinidad Apex, an engineer of international reputation, came to Houston and while in Houston employed L. C. (Jim) Tilbury, at that time with the Atlantic Oil Producing Company at Goose Creek. Tilbury was chosen because of ability he had displayed in handling cementing jobs and because he knew how to take care of the high pressure frequently encounterd in Gulf Coast wells.

L. C. Tilbury is the light complexioned gent in the car. Colonel Hickling, attorney and general manager of Trinidad-Apex, is sitting on running board of car.

And it is to Tilbury's credit, although he modestly says that he has had all the co-operation from the company he could ask, as well as the co-operation of his "Buddy," Ray Hodge, also well known as a driller in the Gulf Coast, that the Trinidad Apex has finished a well that didn't blow out like a rocket, and, as the expression goes, "clean house" at the same time.

Wells Have Big Pressure

The wells on Trinidad are wells of tremendous pressure—that is the wells completed at the 1200-1250 foot depth. The sand from which the oil is produced is very fine and loose. As a rule when the wells come in they blow out and make a lot of oil for a few days and then completely sand up. And it has almost become the practice in Trinidad to expect them to do that and for the companies to expect to get their production from the first few days initial blow.

The use of screen on the island had never been successfully accomplished, largely because the English operators were of the opinion that it could not be successfully used. But Tilbury had been using screen on fine sand on

Simple! *Certain!* *Satisfying!*

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Need no frenzied boosting

Hundreds in Daily Operation
in Texas Fields

Thousands of Dollars
Saved Producers

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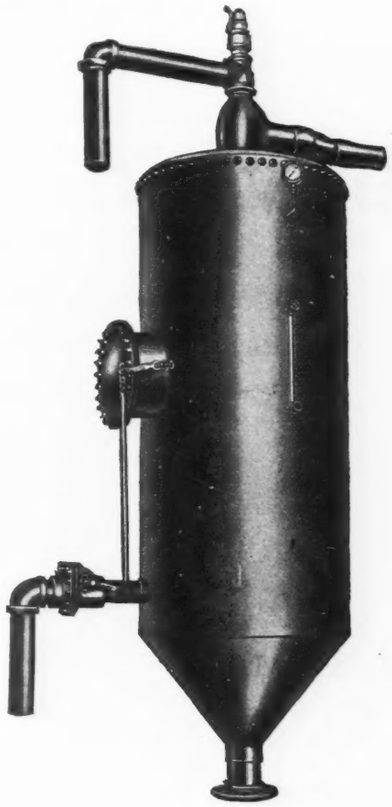
Automatic—Fool-Proof



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C. F. Camp, P. O. Box 289, Tulsa, Oklahoma

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And you find on hand the supplies you want and need. The stocks are kept up from the centrally located warehouses.

Remember your problems are "F-R" problems and you will get helpful co-operative service.

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"F-R" Quality

There's a FRICK-REID Supply Store Near You

In opening an oil field the first requisite is dependable men and supplies. The same judgement should be used in selecting the supplies as that shown in choosing the boss driller and he his crew.

Whether it's engines, boilers, valves, die stocks, pumps, light plants, pulling machines, rotaries, or smaller supplies and repair parts, you can not afford to use any other but the proven kind.

In the large fields from Pennsylvania to Mexico, FRICK-REID supplies are proving that the judgement shown in selecting them was good. They are dependable—and that means economy.

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Reid Gas Engines
National Transit Pumps
Reid All-Metal Powers
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Donovan Boilers
Francis By-Pass Working Barrels
Rensselaer Valves and Fittings
Roebling Wire Rope
Boss Pulling Machines
Hawkins Automatic Gas Trap
Whitlock Cordage
Wilson Elevators
—and complete drilling equipment, either Cable or Rotary Tools.

also
"DREADNAUGHT
Rotary Draw Works
Swivel Slush Pumps

For The Oil Field

An oil field producing property in Trinidad

the Gulf Coast and he proceeded to apply his ideas in Trinidad. They worked, and the company's No. 7 has already had a longer life than any other well on the field, except possibly one or two shallow wells, wells around 500 to 600 feet.

As a result of his work the other operators on the island are already considering the use of screen. One company tried to make its own screen, but used round wire in wrapping the perforated pipe and had no success with it. It is probable that American screen or strainer companies will find a good market in Trinidad in the future and that the production of the island will be far more consistent than it has been in the past.

Used Stuffing Box

The pressure encountered in drilling is so great that even heavy mud won't hold it in. Because of this Tilbury has been forced to adapt a special stuffing box contrivance to enable his men to work under pressure.

He went back into No. 3, the well which made 100,000 barrels in nine hours and later sanded up, and finally succeeded in setting and cementing 10-inch at 890 feet. The casing was only recently cemented and the well is now standing, the casing being set on a cement plug.

"The pressure is so great," said Mr. Tilbury, who was a visitor in Houston last week, "that when we tap the sand the mud pressure won't hold it in. So we have been using blow-out preventers and two stuffing boxes, telescoped one into the other. These stuffing boxes keep the well under control, the returns being controlled by side valves which are barely opened.

"When you drill in you've got to keep going. We use an arrangement of back pressure valves and wash rings and when we fish out the drill pipe with drilling cable, the line is run through the stuffing box arrangement which keeps the pressure in the well and keeps the tools from blowing out of the hole."

Oil at Grass Roots

Oil is found in Trinidad almost at the grass roots, Mr. Tilbury says. He said that in the company's No. 7 well, a sand was encountered at 55 feet that propably would make 50 to 75 barrels a day on the pump. At a depth of 500 to 600 feet wells on Trinidad, and in fact, on the company's lease, make from 300 to 5000 barrels a day. The oil tests about 21 degrees, Baume.

The wells in the 1200 foot oil sand will make from 60,000 barrels to 100,000 barrels initial production, but have to be choked down to 15,000 to 35,000 barrels a day to keep them from tearing themselves to pieces immediately.

The Trinidad Apex holdings which are superintended by Mr. Tilbury, are located about a mile and a half from the Orepouche properties, about three miles from the Trinidad Leaseholds, Ltd., properties, and about seven miles from the famous asphalt lake of Trinidad.

Contrary to the popular belief in the States, the climate in this section is very pleasant, according to Mr. Tilbury. He says that he has experienced many hotter days in Texas than he has in Trinidad thus far, and that at night one sleeps under a light blanket. The country in the section where his company's properties are located is fairly hilly.

At the present time most of the producing properties in Trinidad are shut down or doing very little work as there is no demand for the oil. The Trinidad Apex has a lot of oil in storage at the present time, and is shipping very little.

Mr. Tilbury makes a plea for a better understanding between American drillers and their English employees.

Better Understanding

"A lot of American drillers come back to the States and give a bad report on conditions on Trinidad," he said. "The trouble with some of them is that when they get there they try to drink up all the booze there is, and they can't get away with it. It gets them down. If a man will take care of himself he can have just as good health on Trinidad as anywhere else.

"A lot of drillers when they get up against English engineers who are sent out to operate or superintend the English oil companies' properties, get a chip on their shoulde, and do not show the right spirit of co-operation.

"The English are, I'll grant you, a pretty hard-headed lot. As a nation they are, and since that is their nature I figure that the best thing to do is to take it as a matter of fact. A lot of Americans, when they run up against what they call 'bull-headedness' immediately swell up, say nothing and let the Englishman give the wrong instruction—with bad results—when, by reasoning and showing them, they can get their ideas across.

"The English know that as oilfield men the Americans have it on them, but the attitude of many American drillers is hurting them outside the States."

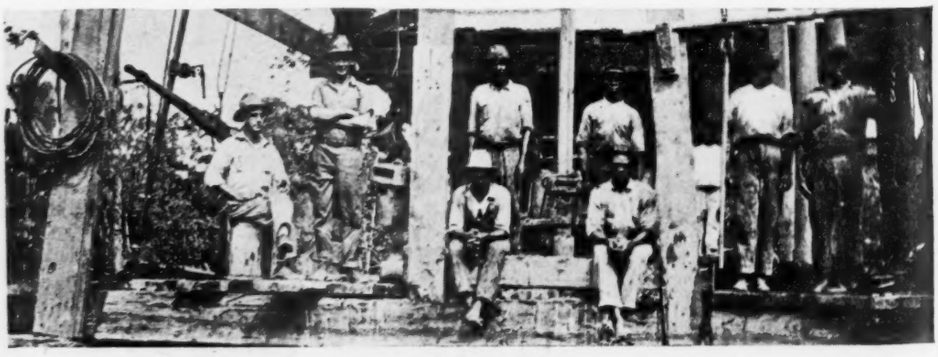
Reports of the United States Geological Survey show that 1921 recorded the smallest production of bituminous coal in 10 years and less coke than in 17 years. Only 406,990,000 tons of soft coal was mined, and coke production was 26,000,000 tons. The coal production in 1920 was 556,516,000 tons.

The largest tin plate orders placed in the United States in many months have been made by the Standard Oil Company of New Jersey and The Texas Company. The Standard's order was for more than 30,000 tons, covering its requirements for the first nine months of 1921, which at present markets amounts to more than $3,500,000. The tin for the Standard is to be used for oil containers at its Bayonne plant, and The Texas Company's order, amounting to 30,000 boxes of plates, goes to Port Arthur.

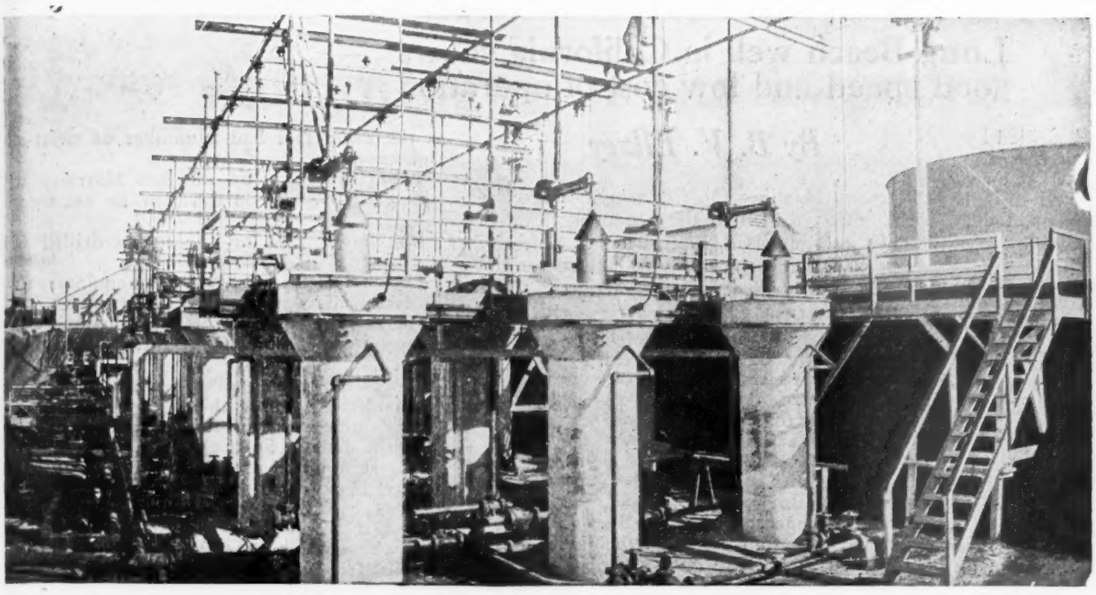
Denver, Colo., Jan. 14. — It has been announced here that negotiations are under way for the construction of a 240-mile pipe line from the Wyoming oil fields connecting Denver, Fort Collins, Loveland and other northern Colorado cities for the purpose of conveying natural gas.

The New York Gas Company, prospective builders of the line, estimate that the expenditure will reach between $7,000,000 and $10,000,000.

W. L. Hopkins, president of National Rosin Oil & Size Co., New York, is in Chicago for several days, visiting the company's offices.



Crew on Trinidad Apex No. 7—Tilbury sitting on box; Roy Hodge, driller, standing. The roughnecks in Trinidad aren't bothered with shoe expense



30-Unit Cottrell Type Electric Dehydrating Plant installed in California cleaning 12,000 barrels of oil per 24 hours, containing 40 per cent emulsion.

ELECTRICAL DEHYDRATION

These photographs of Electric Treating Plants represent the highest degree of efficiency and economy for the treatment of emulsified oil.

The Electric Method of treatment has made rapid advancement from year to year, and is now in use in many fields including California, Texas, and Arkansas, also in the foreign fields of Argentine, Egypt, and Japan.

Estimates of cost for the treatment of your oil can be had by addressing our nearest office.

PETROLEUM RECTIFYING CO. OF CALIFORNIA

Main Office: 260 California St., San Francisco, California

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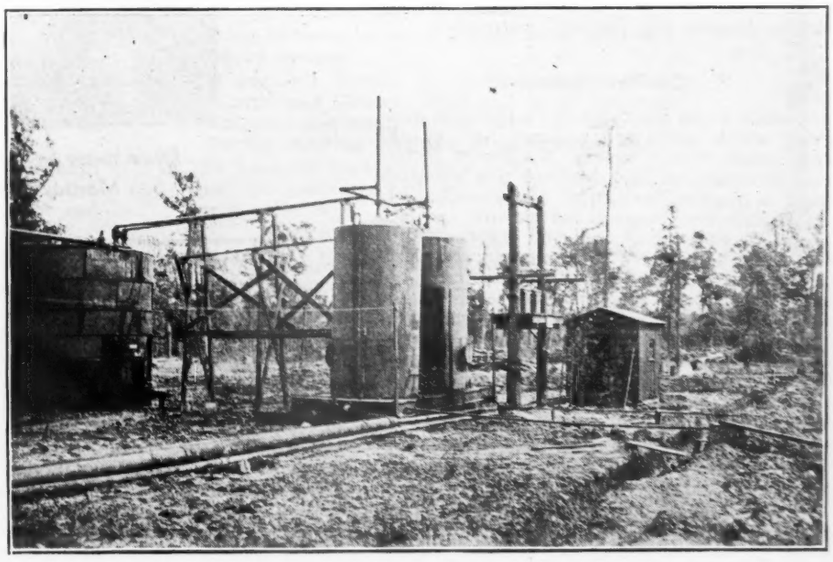


2-Unit National Type Electric Dehydrating Plant installed in the Gulf Coast fields of Texas. These plants are used extensively in Texas, treating approximately 20 per cent of the production of the Coastal fields.

Electric Drilling Effects Tremendous Saving

Long Beach well in California shows good speed and low cost of operation

By B. V. Ellzey

THE power cost on a well drilled by electricity at Long Beach ran only 16.3 per cent as much as that on a well similarly located, and drilled at the same time, in the same field, where steam power was used.

This remarkable record of economy in drilling has been pointed out by W. G. Lane, sales engineer of the General Electric Company of Los Angeles, and substantiates results obtained in other fields of this state, as well as in the Gulf Coast of Texas, and in the Mid-Continent territory.

The record established at Long Beach is the result of what is considered a fair test, for this particular field. The results obtained could not be applied, arbitrarily, to all fields for the reason that conditions are not the same in any two producing sections. But the saving in power cost of wells drilled by electricity has been definitely established in widely scattered fields, and with tests under a wide range of differences in local conditions.

The San Martinez Oil Company, using electrical power, drilled to the producing level in 38 days at Signal Hill, Long Beach. A nearby well of another company was started on the same day and drilled with steam power. The crews of the two tests made a race with each other. Both wells set casing at the top of the sand the same day, 38 days after starting. The wells were cemented at the same time. In fact they made the distance to production in almost exactly the same time.

The race was interesting. At the outset, the electrically drilled well got behind. The boys drilling with steam made hole a lot faster on the start. But towards the end, the electric outfit outdistanced the other well so much that it completed, at approximately the same depth on the same day. And during the whole performance there was not a single accident of consequence on the San Martinez well, whereas the other test had a number of twist-offs, and expensive accidents.

The power cost on the San Martinez well was $601, for the 38 days, or an average of about $15.80 a day.

The power cost on the steam drilled well was about $100 a day.

The cost of installation of the equipment for the two wells was practically the same.

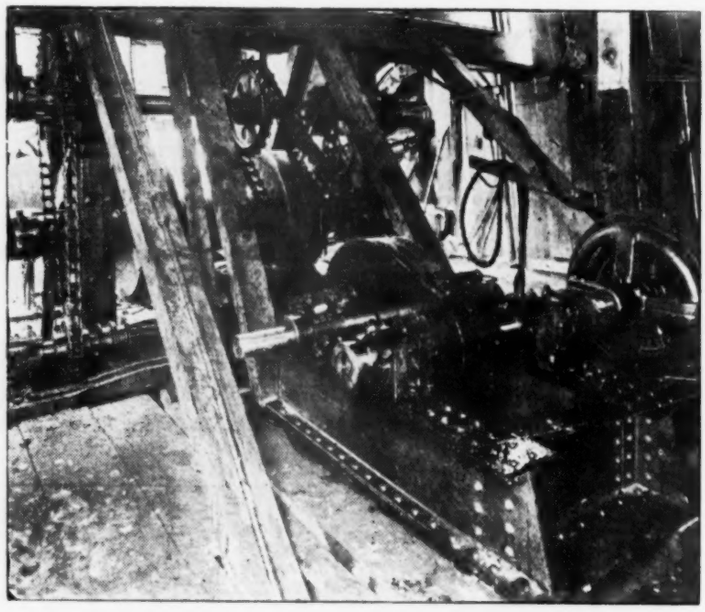
The salvage value of the San Martinez well's prime mover equipment is said to be about 90 per cent.

The salvage value of the steam equipment is considerably below this figure.

That's the story of this particular case of electrical drilling, in a nutshell.

Of course there are factors at Long Beach that are peculiar to that field, and which have to be taken into consideration in applying these results to other experiences. For one thing, the water supply for the field has to be obtained from the city, and is expensive. Fuel oil, for the steam outfit, cost about $2 a barrel

(Continued on page 38.)



Draw motor assembly driving shaft drive rotary equipment on the San Martinez Oil Company No. 1 at Signal Hill, Long Beach

LEAKS IN THE OIL FIELDS

(Continued from page 24.)

Study of the logs indicated a thorough test had not been made consequently it was recommended to try to clean out, deepen the well and shoot again. Unfortunately the drilling contractor was not in sympathy with the findings of the geologist and apparently in order to cover up his bad judgment in completing this well at too shallow a depth, he lost a string of tools while cleaning out and finally abandoned the hole.

Instances where wells have been drilled too shallow for a test of the known productive zone, shots improperly placed to get the best results, or where productive zones have been drilled through and not tested, are too numerous to mention. Most of these leaks could be avoided if the samples of the well cuttings were examined and the formations indicated in the driller's log properly correlated.

Oil Run Tickets

A study of oil run tickets of a pipe line company which purchased a large part of the flush production from the Northwest Extension Burkburnett field, showed this company made a regular deduction of approximately five barrels per thousand barrels run, for each degree of Fahrenheit above 60 degrees. It is customary to make a correction for temperature in certain fields in the United States but where deductions are made for each degree above 60 degrees, a like addition is made for each degree of temperature below 60 degrees. During approximately 7 months of the year the temperature in the Burkburnett field is above 60 degrees and at times it stands at or near 90 degrees F. for long periods. There are about five months when the temperature is below 60 degrees and from three to four months when the mean temperature is below 50 degrees F. The investigation showed that this company made no correction for the months at which the temperature stood below 60 degrees F. Naturally the producers were the losers of many barrels of high grade oil for which they should have been paid.

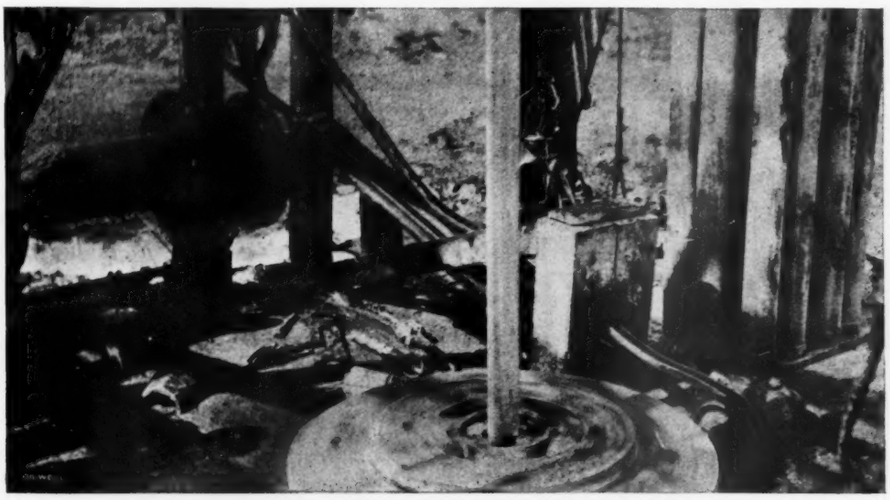
While appraising a property in the Burkburnett Townsite field it was noted that the gauge on the property under investigation indicated 16 inches of vacuum. The gauges on all adjacent properties indicated 21 to 21.5 inches. The casinghead company serving the property was requested to increase the vacuum on this lease to equal that maintained on the adjacent properties. The effect of this correction was an increase of 25 barrels of oil per day from four wells or an increase of 6 barrels per well per day. No doubt several thousands barrels of oil were lost to the operator of this lease due to the lack of equilibrium in the vacuum on this and adjacent leases.

The value of a number of bulletins published by the United States Bureau of Mines, on the correction of wasteful methods in use in the petroleum industry, cannot be commended too highly.

The fact must be brought home to the operator that every unnecessary shut down, whether it be during the drilling of a well or the suspension of producing wells (unless intentionally suspended) is a loss to the company. The method of completing a well and guarding against water trouble is an important factor. The type of pumping equipment, and the location of the working barrel in the well have a direct bearing on the amount of oil produced and the cost of production.

Some leaks which are altogether too common among leasing and development companies, are too unpleasant to mention. Before these leaks can be plugged a higher code of ethics and ideals must be adopted by humanity.

Advantages of the Imperial Rotary



Actual photograph of Imperial Rotary drilling at Pierce Junction, Texas, where 3,700 feet of 6-inch 23½ pound casing was set in 9 hours and 30 minutes

1. The Imperial Rotary is the only Rotary ever manufactured which successfully "makes up" (screws together) and "breaks out" (unscrews) casing, drill pipe and tool joints without manual labor, performing this work in less than half the time required by hand.
2. By eliminating the use of the cat-head in "making up" pipe the Imperial Rotary not only eliminates a great deal of hard labor, but also insures the safety of the drilling crew.
3. The Imperial Rotary reduces the possibility of "backing off" the tool joints going into the hole on account of their not being properly locked, as the motion of the machine when the joint hits will absolutely lock it. Wear and tear on joints is also reduced because this feature prevents sand from working into the joints, causing them to freeze.
4. On fishing jobs the Imperial Rotary is particularly valuable as it is possible to unscrew the joints with the machine itself without rotating the string in the hole, making a great saving in time and labor. This is accomplished by merely reversing the engine and is a feature found only in this rotary.
5. The Imperial Rotary also reduces to a minimum the danger of parted casing caused by a collar being loose on a joint. Both threads (pipe and collar) are made up in one operation and all sizes can be handled up to and including 12½ inch.
6. Simplicity is the keynote in the design of the Imperial Rotary. The change from a drilling position to that of making up pipe is a matter of seconds only. Just release (slide out) the two locking pins that lock gear to table and insert locking bar between skids to prevent table from rotating.
7. The Imperial Rotary can be placed on any chain drive Rotary Rig and will line up without changing draw works, as it has an adjustable sprocket on the pinion shaft. It can also be furnished for shaft drive if desired.
8. The Imperial Rotary is complete, both spiders being a part of the machine. The larger spider, handling from 8 to 12½-inch casing, is an integral part, while the smaller, which accommodates all sizes up to 6⅝ inch, is of split and hinged design.
9. The Imperial Rotary is constructed of Open Hearth and Electric Steel and is so designed that sand and water cannot enter the bearings, thereby insuring long life to all working parts.
10. The Imperial Rotary is constructed so as to permit the passage of 19-inch fishtail bits and 14-inch roller bits.

For further details of the "Oilwell" Imperial Rotary inquire at any of our Branch Stores

OIL WELL SUPPLY CO.

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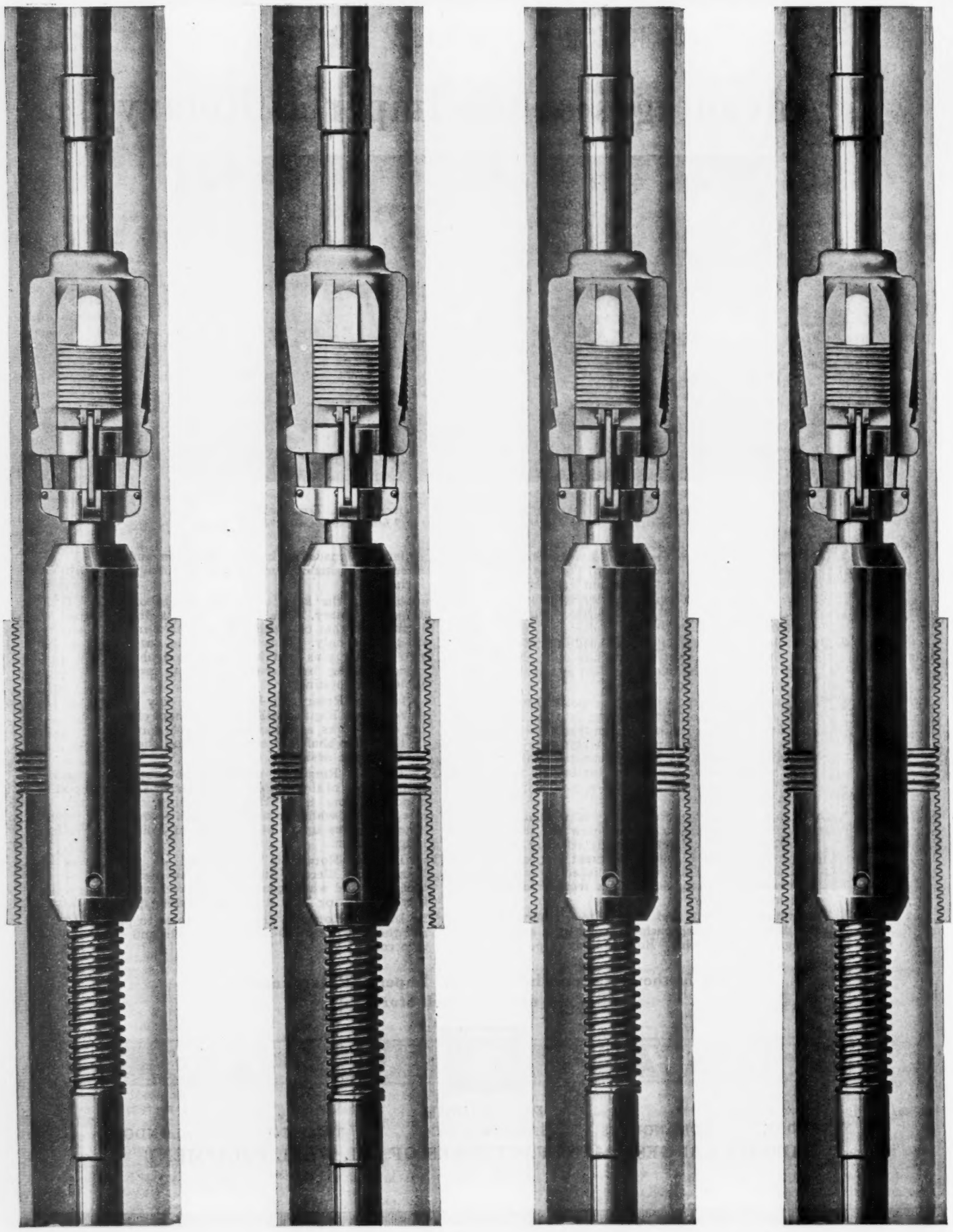
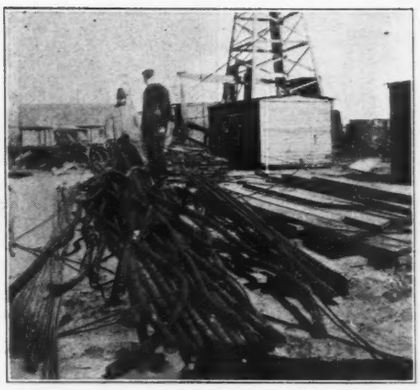
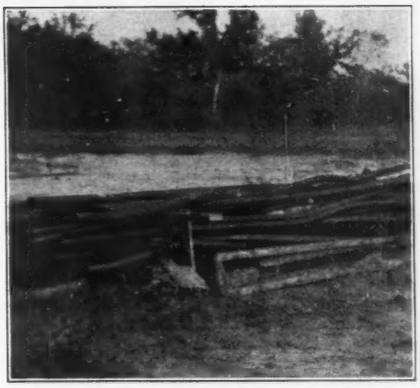


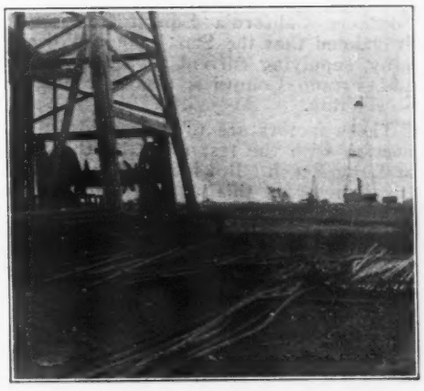
USE THESE AND PREVENT THESE



TEXAS—LOSS $13,000



LOUISIANA—LOSS $2,500



OKLAHOMA—LOSS $1,800

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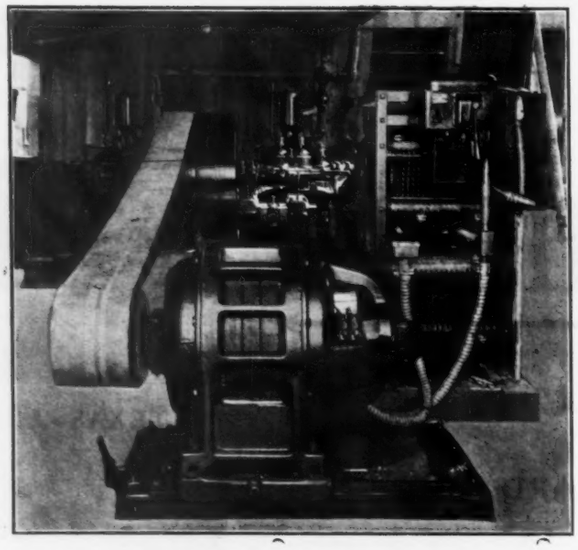

Duplicate power drive Ideal slush pumps on No 1 rig of the San Martinez Oil Company at Signal Hill, Long Beach, California

ELECTRIC DRILLING EFFECTS TREMENDOUS SAVING

(Continued from page 34.)

at the well. If this item could have been eliminated, a marked difference in results would obtain, for it takes 25 to 40 barrels of oil for each 24 hours drilling. On the other hand, the rate for juice, supplied by the Southern California Edison Company, is said to be unusually high. A lot of complaint has come recently from oil company executives and others in Southern California, because of the high rate charged for current by the Southern California Edison Company, as it is claimed that the San Joaquin Power Company, supplying current to the fields of Kern and Fresno Countiies, makes a much lower power rate.

These factors are to be considered in connection with the test made by the two wells at Long Beach. But it is pointed out by electrical men that this method of drilling would be a distinct economy to the operating company, even though the power cost might be the same, although tests made under all conditions, in various fields of the country, combine to show that power cost is invariably lower when electric power is used.

The greater factor for consideration, electrical men say, is in the success with which hole is made without accidents or delay; and in the value of the equipment at the completion of the well.

It may be possible to drill faster, in the initial stages of making a hole, with steam power, but the electric outfit will maintain its speed when a greater depth is reached, and the uniformity of motion ,and lack of delays or accidents, offset any delay that may be entailed in getting the hole started.

It is claimed that the motors and countershaft, as well as belts, etc., used in drilling by electricity are little the worse for wear, and may be re-employed almost indefinitely on succeeding wells. One big loss in the drilling of wells by steam is the rapid depletion of boilers, especially in fields where the water is of mineral or alkali content that cuts out the tubes. It oftens happens that a boiler is practically "gone" with the drilling of one well.

Some Other Tests

On Jan. 7, 1921, the Gulf Production Company completed a re-drilling job on a well at Goose Creek, using electrical power on a rotary outfit. The field had been recently electrified, and afforded a good opportunity to make a test of electrical drilling.

Suman, in his "Petroleum Production Methods," describes the equipment used, and results obtained. The hole was cleaned out, and drilled from 2100 feet to 2685 feet, through gumbo and boulders, from Dec. 7 to Jan. 17, and the results obtained from the application of electricity to drilling were highly satisfactory.

The following table shows the saving in the application of electric power, on No. 27 Stokes, of the Empire Gas and Fuel Company in Kansas:

	Boiler and Engine	Motor	Loss	Saving
Initial cost	$1,862.00	$1,625.00		$237.00
Cost of Installation (including belts, etc)	432.50	768.03*	$335.53	
Estimated depreciation per well	290.00	32.50		257.50
Cost of water	480.00	60.00		420.00
Estimated cost of fuel oil at $36 a day	2,160.00			
Cost of electricity.		574.93		
Saving in cost of power				1,585.07
Saving in installing pumping motor in house on same foundation				186.16
Saving in oil production during change to pump				1,305.00
Net estimated saving of electric drilling over steam				3,655.20

*Installation charge unusually high due to fact equipment was new and changes had to be made that will not be necessary in future outfits. Also includes cost of motor house.

Description of Equipment Used

W. G. Lane, sales engineer of the General Electric Company at Los Angeles, has prepared the following description of the physical equipment now available of the General Electric Company:

Special equipment to handle all of the necessary operations of drilling by either the standard cable tool or rotary process has been developed by the General Electric Company. The standardized equipment for cable tool drilling consists of a 75 horsepower variable speed motor; a main controller and resistor for providing thirteen possible speed variations between half and full load speed; an auxiliary controller and resistor for dividing each of the thirteen speeds furnished by the main controller into 11 additional speeds; an oil circuit breaker for protection against undervoltage or overload; and a speed reducing countershaft for installation between the motor and band wheel to give the correct drilling speed. In the installation of this equipment no change is necessary in the construction of the rig. There are two accepted methods of installation. In one case the countershaft is mounted on the usual engine block, the motor itself being mounted on an additional block situated on the band wheel side of the countershaft, the mechanical arrangement being as illustrated. A later practice than this is to mount the motor and countershaft on the same engine block, constructed by bolting together two standard 24-inch blocks, and driving from the motor to the countershaft through the medium of a silent chain running in an oil case. This later arrangement permits of a smaller engine house and does away with any possibility of belt slippage under heavy loads. The speed controlling apparatus is mounted on a separate timber skid to provide greater transportability. The Shell Company of California are operating four or five of these equipments on the Avenue at Ventura.

The latest cable tool drilling equipments provide a maximum of approximately 140 speeds, providing all of the flexibility of steam drive. The controllers are provided with rope wheels, and are operated independently by telegraph cords from standard throttle wheels mounted on the headache post. In standard cable tool drilling the matter of utmost importance to the operator is that the tools shall have a free drop in order to strike the most cutting blow. In order to accomplish this, the motor must slow down perceptibly on the lifting stroke, and overspeed on the falling stroke. This result is very satisfactorily obtained through the very fine speed adjustment provided by the auxiliary resistance so as to make the beam accord with the natural period of vibration of the drilling line. The auxiliary resistance is designed only for obtaining micrometer speed adjustments when drilling on the beam or tonging pipe, and must be shorted out by means of the auxiliary controller during all other operations, such as pulling the tools, bailing, fishing, etc. This is for the reason that power required for actual drilling on the beam is only a small percentage of the normal rating of the motor, and if left in circuit during operations requiring either the normal or overload capacity of the motor, would be subjected to such severe overloads as to cause great liability of its burning out.

The micrometer speed adjustment is necessary because the beam has a critical speed at which the tools will strike the most effective blow. Too slow a stroke means too little work accomplished for the time consumed, while too fast a stroke merely takes the stretch out of the wire line without permiting the tools to strike a cutting blow. Standard control as furnished by the General Electric Company provides a maximum speed of 65 strokes on the crank with a minimum of from 20 to 25 strokes for tonging pipe.

Rotary Drilling

For drilling by the rotary method, the same electrical equipment is required, but with a slightly different set-up. In standard cable tool drilling, even under conditions of frequent reversals, the band wheel belt provides a cushion for the motor bearings against severe shock. Therefore a standard two-bearing motor is satisfactory. On a rotary rig, however, reversals are much more sudden and frequent, and occur while the motor is operating at higher speed and delivering greater horsepower. Furthermore, when the bit strikes a boulder or other formation which it can neither penetrate nor dislodge, and starts putting a twist in the drill stem, an instant reversal is necessary to save the drill stem from being twisted off.

In the pioneering of electric rotary drilling equipments, the drive from the motor to the

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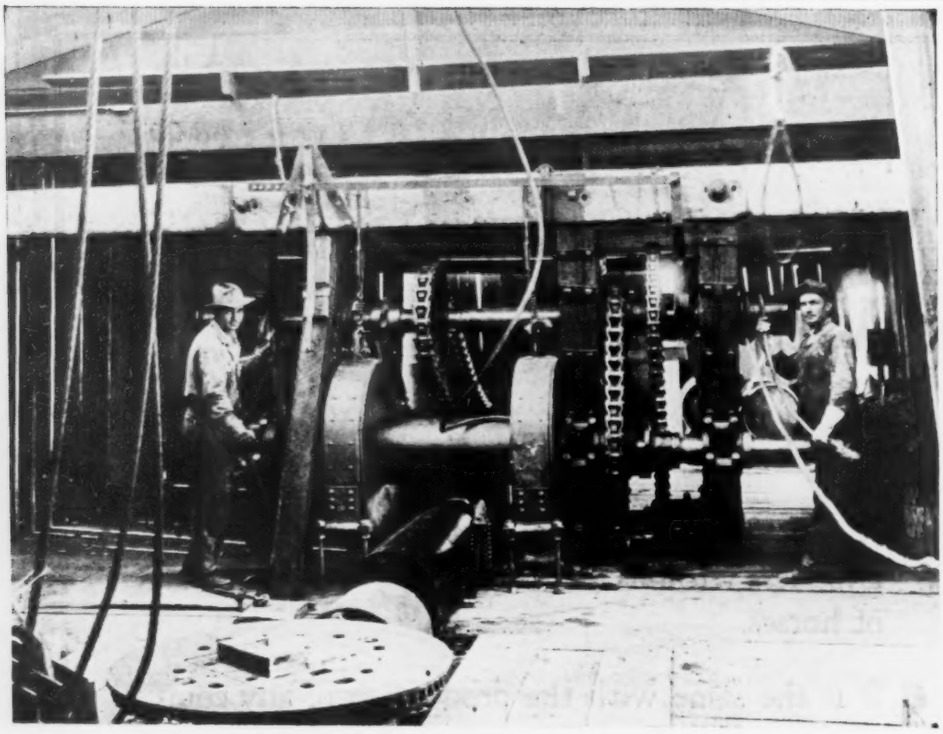

Standard No. 5 California shaft drive rotary, electric driven. The electric equipment is behind the draw works.

speed reducing countershaft was through the medium of either standard 1240 rotary chain, or high speed silent chain. Of these two types of drive, the latter is to be preferred, operating through short shaft centers. After considerable experimenting it has been demonstrated that the ideal drive from the motor to the countershaft is through the medium of a spur gear train. The latest development in this type of set up is that installed for the San Martinez Oil Company in the Signal Hill field at Long Beach. The accompanying cut gives a good idea of the general arrangement.

There are two standard sizes of electric rotary drilling equipment. If the equipment is to be used only for straight rotary work, and it is desired to operate the table at high speeds in order to make hole, a 100 horsepower drilling motor is provided. However, if it is desired to use the equipment for combination work, changing over to standard cable tools after the water string has been set, the 100 horsepower equipment provides very poor speed control for drilling on the beam, since its capacity is so much greater than the load demand. Experience has demonstrated that if the operator will proportion his sprockets so that the rotary table speed cannot exceed 85 revolutions per minute with the motor wide open, which speed compares very favorably with that of steam, a 75 horsepower cable tool motor will very satisfactorily handle the work, the added advantage being that when the changeover is made the equipment will provide the flexibility of control on the beam for which it was originally designed.

In rotary drilling with a fishtail bit micrometer speed control is not as necessary as with cable tools and the auxiliary control is, therefore, not used, except when a very slow motion is desired for operating a hard rock bit. When used for this purpose a minimum speed of about 30 revolutions can be worked.

For rotary drilling there is necessary, in addition to the drilling motor, a 50 horsepower mud pump motor for driving the mud hogs. In installation where duplicate pumps are used, a special motor base is provided for shifting the belt from one pump to the other when shutdowns for repacking, etc., become necessary. Such an installation is shown below, the equipment also being that installed for the San Martinez Company.

Cost of Installation and Operation

On the basis of present prices a standard cable tool electric drilling equipment can be installed ready to run, but exclusive of all belts, buildings or foundations, for approximately $3200. A combination rotary and cable tool equipment using a 75 horsepower drilling motor and 50 horsepower mud pump motor will cost approximately $4700 installed. A straight 100 horsepower rotary equipment, including the 50 horsepower mud pump motor, will cost approximately $5000 installed. These prices do not include the cost of service transformers, which depends on the primary voltage furnished by the power company. Electrical equipment duplicate of that of the San Martinez Oil company will cost approximately $8000 installed, exclusive of any belts, buildings or foundations, but including the service transformers and special fabricated base for the drilling motor set up.

This equipment is designed for combination drilling, and although it has been operating but a short time, it has proven so satisfactory that W. Kammerer, field superintendent for the company, and R. E. Bering, Jr., the manager, have ordered two duplicate equipments for another location on Signal Hill.

So far as drilling costs are concerned, this varies according to the nature of the equipment, the character of the territory, the depth of the well, etc. Naturally as the hole goes down the cost increases, since it takes longer to bail, longer and heavier strings of casing and drill stem must be handled, and the weight on the beam constantly increases. Averages from a great number of drilling wells in Southern California show the cost of operating standard tool equipments averages from $7 to $9 per 24-hour day for all energy consumed about the rig, including rig lighting, forge blower, etc., for wells running from 1800 to 4580 feet, while 75 and 100 horsepower rotary equipments show an average of from $10 to $15 per 24-hour day on the same basis. On a recent check of the San Martinez equipment, the total power bill amounted to $12.10 per day for the first 15 days, at which time they were down 1350 fee. These are averages of actual power bills paid by operators using these rigs, and speak for themselves. To the old steam driller who has fired with fuel oil, no further argument is necessary so far as the question of operating economy is concerned.

About one billion gallons of gas oil is used annually in the United States in the manufacture of artificial gas in cities. The gas companies also use about eight million tons bituminous coal, and two million tons each of anthracite and coke. The artificial gas manufacturers sold 319,888,000,000 cubic feet of gas in 1921, a new high record for the industry. The amount used was three times more than 20 years ago and twice 10 years ago.

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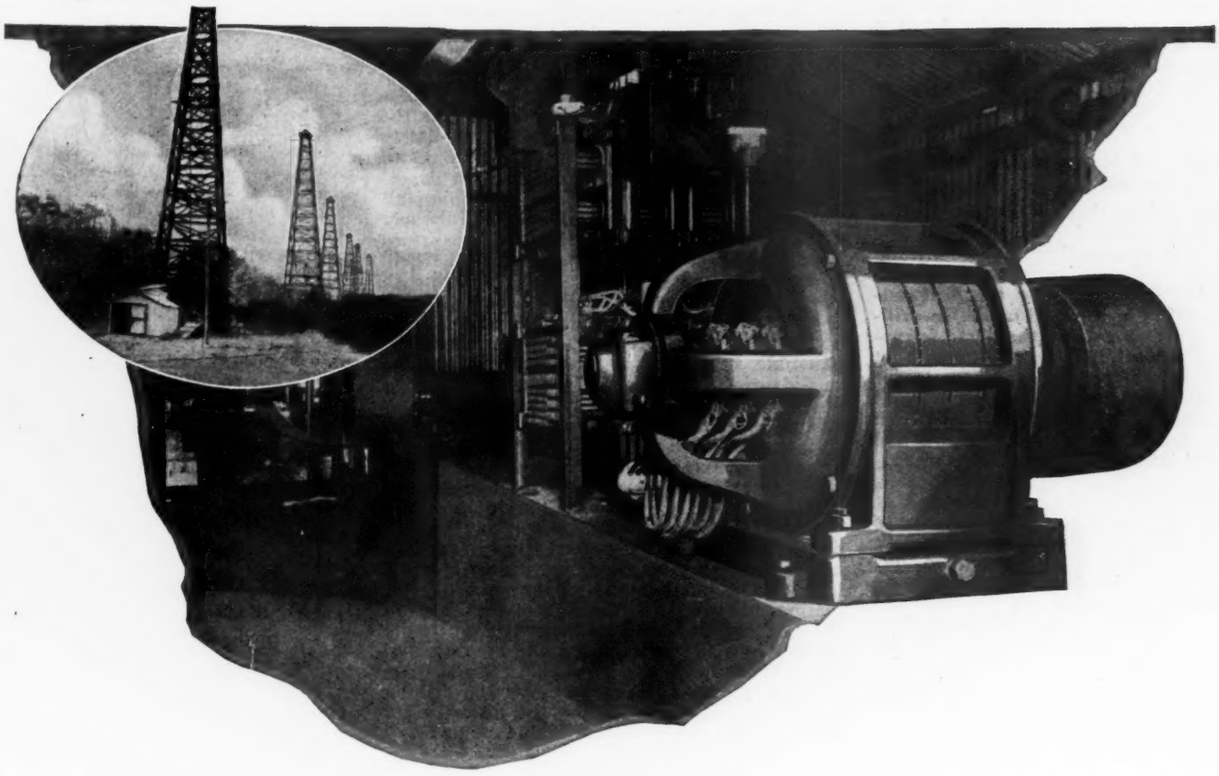

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Reverse Return System of Rotary Drilling

New plan enables better check on formations the bit is passing through; successfully used

*By John R. Suman**

DURING the past few years there has been developed in the Gulf Coast region a new system of rotary drilling about which there has been nothing published. As it is such a radical departure from the standard method of rotary drilling it has been deemed advisable to describe this system in order that the profession in general may become conversant with it.

Comparison of New Method With Common Method

In the standard method of rotary drilling the drill mud is pumped down through the drill stem and it passes through the drilling bit and returns to the surface around the outside of the drill stem carrying the drill cuttings in suspension in the drill mud. In drilling into the cap rock or into the dome formations in certain fields it has been found that the drill mud leaves the hole and travels out into the formations, and, as expressed in oil field terminology, they "lose returns." In some cases the drilling rig is shut down and mud is pumped into the cap rock or dome formation for two or three weeks before they can get returns at the top of the hole. At the same time it is usually noted that the water level in these formations or the level which the water will seek in the hole when left standing is about sea-level.

It can readily be seen that when returns are lost and no cuttings received at the surface that it is impossible to tell the nature of the formation being drilled in or to estimate the amount of oil or sulphur in the formation. In some cases coring was resorted to but was rather unsatisfactory.

Principal Uses of Reverse Return System

It has been in the exploration work preliminary to the development of the sulphur deposits in the salt domes of the Gulf Coast that the reverse return system of drilling has been perfected. It has been used at Big Hill in Matagorda County, Texas, at Damon Mound in Brazoria County, Texas, at Freeport, Texas, and certain fundamental details were employed at one time at Sulphur, La. The reverse return system, which is to be described in this article, is the one which was perfected by The Texas Company in the exploration work which they have been carrying on from 1917 to date at Hoskins Mound, Brazoria County, Texas. The work was carried on at Hoskins Mound under the personal direction of J. E. Schroeder, superintendent for The Texas Company in that district. It is to Mr. Schroeder that a great amount of credit is due for the success of certain details. Harold W. Fletcher, chief engineer of the Hughes Tool Company, collaborated with Mr. Schroeder in the development of the rock bit which was used in drilling the lime "cap" and anhydrite rock. This bit is shown in detail in Fig. 4. It is the purpose of this article to outline in detail the operations concerned with the reverse return system as applied to the work of exploration for sulphur. At the conclusion of the article we will endeavor to point out its adaptability in certain phases of petroleum exploration.

Details of Process

In the reverse return system of drilling an air hose is connected to the swivel and a one-inch air pipe is run down in the drill stem to a depth varying from 350 feet to 400 feet. When compressed air is injected into the drill stem under a pressure of about 100 pounds per square inch, the column of fluid within the drill stem is aerated and the fluid immediately begins to travel up through the drill stem to the surface. This causes a movement downward on the outside of the drill stem of all mud and water contained within the hole, and this water traveling past the cutting surface of the bit brings into the inside of the drill stem all cutings made by the bit. Owing to the fact that the hole outside of the drill stem is full of water which desires to seek a level somewhere near sea-level there is an inexhaustible supply of water flowing down the outside of the drill stem. In cases where there should not be an adequate supply of water within the formation it would be very easy to introduce such quantiy of water as is needed into the hole at the surface.

In carrying out the work at Hoskins Mound it was found that the top of the dome or cap rock varied in depth from 750 feet to 1100 feet, depending upon the location. It was customary to set casing on top of the cap rock which immediately overlies the sulphur-bearing formation. Setting this casing prevents any of the soft materials which overlie the dome from getting into the hole during the operation of the reverse return system. In drilling up to the point where casing was set the drilling operations are carried on by the ordinary rotary system, using standard mud pumps and pumping the mud down through the drill stem.

Kinds of Bits Used

In drilling in the anhydrite and lime rock two different styles of bits were used. One bit was a short model of the ordinary fish-tail bit with the water courses reamed out to 1¼-inch size. The other bit used and the one which made the most progress in the rocks was a modified form of Hughes cone bit as shown in Fig. 4. It will be noted that a special method of lubrication was perfected for this bit in order that the drill cuttings could move up through the bit in about the same position as that occupied by the lubricator in the standard Hughes cone bit. The surface arrangement of air hose and water hose was as shown in Fig. 1. The details of the swivel were as shown in Fig. 2. A standard Johnston swivel was used with the exception that the gooseneck was removed from the top and a specially threaded forged steel tee was substituted in its place. Into the top of this tee the one-inch air pipe was introduced. The one-half-inch air pipe running down the inside of the drill stem was screwed into this head from the inside as shown in Fig. 2. The 2½-inch water hose, which was an ordinary wire-wrapped hose, was connected into the side of the tee as shown and carried the aerated fluid and cuttings to the sampling box as shown in Fig. 1. The one-half-inch air pipe which went down through the swivel and into the drill stem about 400 feet was threaded with left-hand threads in order to avoid trouble by unscrewing. This part of the pipe remains stationary while the drill stem is revolved about it and it can easily be seen that if it was threaded

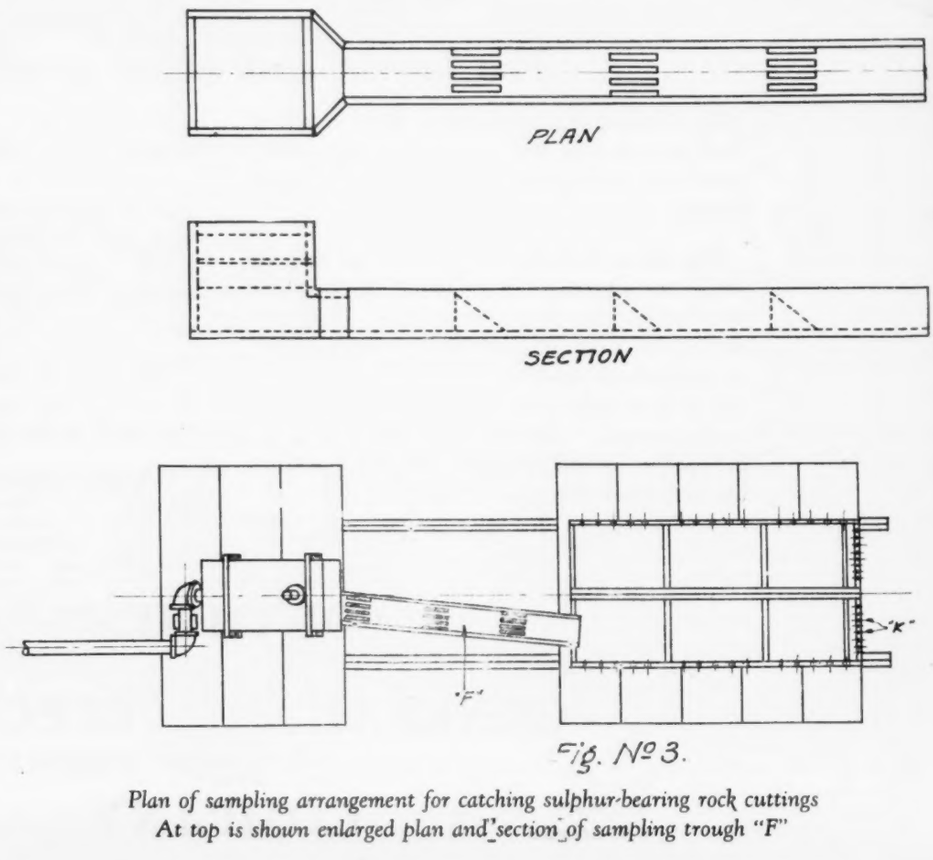

Fig. No 3.

Plan of sampling arrangement for catching sulphur-bearing rock cuttings
At top is shown enlarged plan and section of sampling trough "F"

*Mr. Suman is assistant to the vice-president and general manager of the Rio Bravo Oil Company, is a petroleum technologist and a regular contributor to The OIL WEEKLY. He is author of a recent book "Petroleum Production Methods" that has had a cordial reception at the hands of the oil trade.—Editor.

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(Signed) DR. E. OSCAR RANDOLPH,
Professor of Geology, Texas A. & M.

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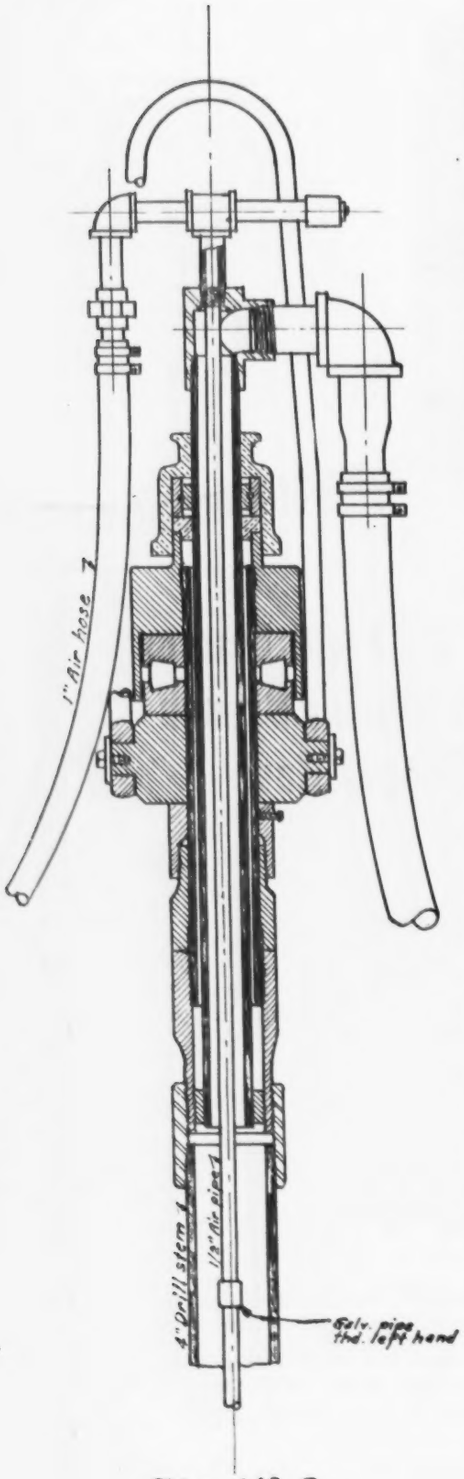


Fig. No 2.

Specially designed swivel for use with reverse return system of drilling

with standard right-hand threads that it would tend to unscrew in the hole.

The one-inch air pipe from the air compressor was led up the side of the derrick to the second girt in about the same manner as the standard mud pipe which is used in the ordinary system of rotary drilling. In drilling by this system a "kelly joint" or "grief stem" cannot be used as the opening on the inside of it is too small. Therefore, ordinary four-inch drilling pipe is used with grip-rings in the rotary table top for holding the pipe while drilling. The bottom of the one-half-inch pipe which is inserted into the drill stem is cut with slits with an ordinary hack-saw. These slits are so cut that they point upward and they are cut along the bottom eight feet of the air pipe.

Equipment Used on Surface

A standard Hall-two-stage air compressor of 200 cubic feet per minute capacity was used. This compressor had 12½ by 14 and 6 by 14 air cylinders and a 16x14 steam cylinder. Air was generated at 130 pounds per square inch pressure. It is Mr. Schroeder's opinion that a machine of 100 cubic feet per minute capacity would be ample for doing this work. A 45 horsepower boiler was used to run the air compressor in carrying on the work at Hoskins Mound. It is believed, however, that an ordinary 45 horsepower boiler would be large enough to operate a 100-foot machine and the drilling engine on the drill rig. As no pumps are used in this system it is evident that a large amount of steam would be available for operating the compressor.

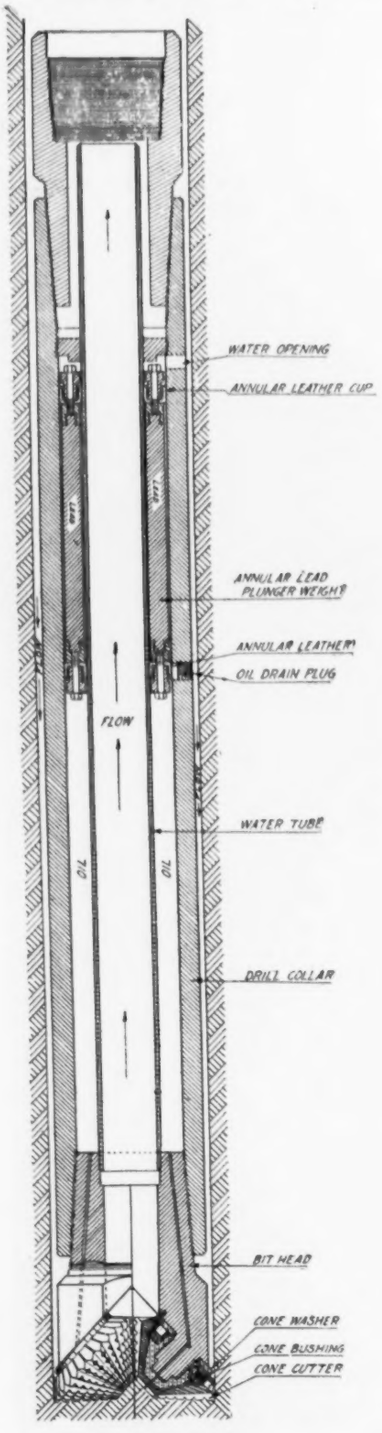
This system of drilling was used successfully at Hoskins Mound in drilling wells with depths ranging from 750 to 1500 feet. It worked very successfully at these depths and Mr. Schroeder is positive that it could be successfully used at any depth, say, up to 3500 or 4000 feet.

Equipment for Handling Cuttings

The fluid containing the drill cuttings coming out of the swivel at the top of the well is conducted through a 2½-inch hose and a 3-inch pipe as shown in Fig. 1 to a position at the side of the derrick as shown at "A." The air contained in the fluid is allowed to escape through a 2-inch pipe "B" around the top of which an ordinary canvas bag "C" has been wrapped. The water or cuttings then drop through a nipple "D" on to a 14-mesh screen protected with one-fourth-inch mesh galvanized screen shown at "E." This screen collects all of the coarser material and the fluid is then conducted through the dividing box "F" shown in detail in Fig. 3. This dividing box, or flume, contains 3 sets of sampling gates, each of which discharges to waste one-half of the fluid reaching it and passes the other half on for sampling. Therefore one-eighth of the cuttings from the well reach box "G." The fluid entering the box "G" passes over the baffles "H" and the larger material is deposited in the first compartment. The fluid passing over the baffle "H" deposits in the second compartment still lighter material and then passes over the baffle "I" and under the baffle "J" and issues from the box at the point "K." A number of holes into which plugs are driven are bored on the sides of this box as shown at "L." Samples are taken from these holes by removing the plugs. The box "G" is divided into two parts and the trough "F" is shifted from one part to the other after the drilling of five feet of hole. Thus the samples taken from "E" and caught in the box "G" for each five feet of depth give a very accurate sample. The cuttings collected are the entire amount of formation drilled through and such material as caves into the hole, excepting the seven-eights portion which falls through the dividers. Thus it can be seen that there are four distinct samples taken of the formation. The first is the screen sample and the next three are the first, second, and third, compartment samples from the box "G." The samples taken at "E" and that collected from the box "G" are dried in a special steam bath and pulverized in a pulverizing machine. The samples taken from the pulverizing machine are then divided in a Jones divider which divides them into four equal parts. One of these samples is then assayed for sulphur by the standard carbon tetrachloride method. This method consists in dissolving 10 grams of the sample in 10 cc of carbon tetrachloride. This is put into a beaker and set on a hot water bath. After bringing it to boiling the sample is filtered into a 20 cc eralymeyer flask. This is boiled down and the sulphur is left in the bottom of the flask.

Possibilities of This System in Drilling for Oil

It is a fact well known to all rotary drillers that in drilling for oil, especially in the Gulf Coast region, returns are lost in formations besides cap rock. When returns are lost it often takes a week or so to mix mud and mud up the porous formation, which is quite often a sand. Sometimes a driller will drill ahead through the formation even though he is losing returns. This is very risky and at the same time it is impossible to tell whether or not the forma-



SAMPLING BIT

Fig No. 4.—Type of rock bit used in drilling by reverse return system

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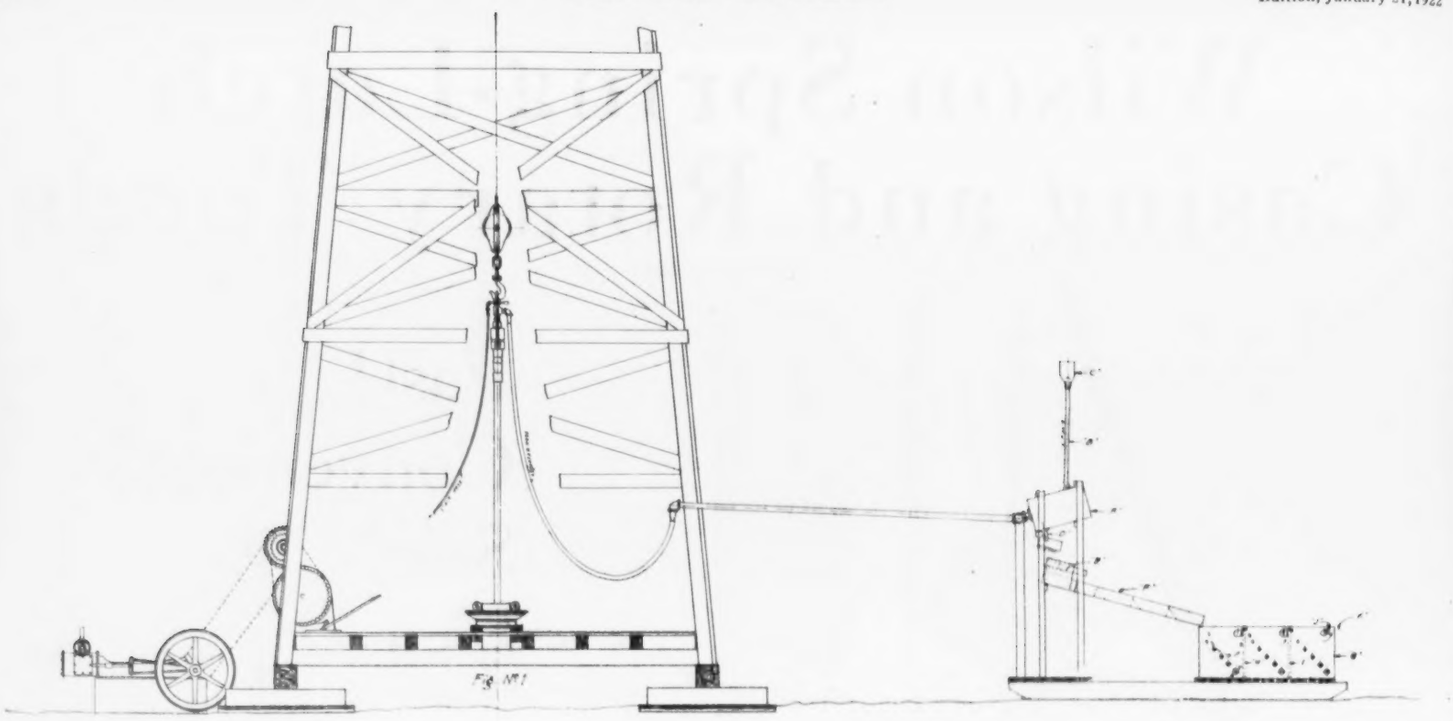


General arrangement at surface for drilling by the reverse return system

tion is oil-bearing. Cases have been known where strainer has been set in a formation in which returns have been lost and paying production developed.

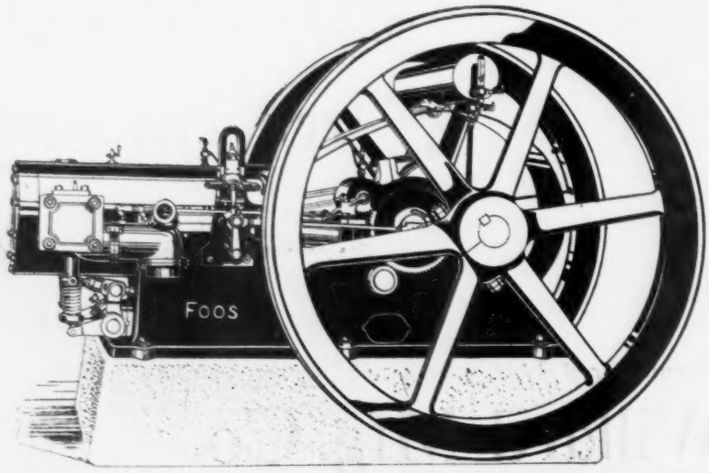
It is believed that under favorable conditions in prospecting for oil that the reverse return system could be used to advantage. It is probable that in this case heavy mud would have to be introduced into the well at the casing head and allowed to travel down the hole around the outside of the drill stem. The only advantage ofthis procedure would be that a sample of the formation being drilled through would be obtained.

It is believed that a porous sand could be drilled through by this system with less loss of mud than by the ordinary system. There would, of course, be more danger of getting the drill stem stuck than there would be by waiting until the formation had been thoroughly mudded.

The FOOS Type O K Oil Field Engine

Combining the highest quality of materials with 35 years exclusive engine building experience — Sizes, 25 - 35 - 50 H. P.

THE FOOS GAS ENGINE CO., Springfield, Ohio



Important Features of Design:

Positively driven valves;
Unencumbered cylinder head;
Piston and all bearings lubricated from central system of about 72 hours capacity;
Governor running in bath of oil and enclosed in dust-proof case;
High Tension Oscillating Magneto of exceptional quality;
Complete accessibility.

REPAIR PARTS STOCKED IN ALL PRINCIPAL FIELDS.

Cutting Down Refinery Losses

At the Nineteenth Annual Meeting of the National Petroleum Association held in Atlantic City September 21, 22 and 23, the report of the manufacturing committee to the convention included the following:

"There are certain losses in refining which cannot be overcome, but few if any refiners have their refining losses cut to the minimum. The principal causes of excessive losses are DEFECTIVE TANKS, including non-gas-proof roofs, defective piping and leaking pumps, condensers too hot while volatile vapors are passing through the coils, carelessness in treating volatile products by excessive blowing or in drawing off chemicals and water, lack of properly constructed and a sufficient number of catch boxes to reclaim oils from waste water.

"Tanks which are not absolutely tight are indeed expensive equipment. Volatile products such as gasoline and naphtha, when stored in poorly constructed tanks, may not give visible evidence of leakage, because these products, when coming through defective seams or around poor rivets, evaporate so rapidly as to be hardly observable. The vapors from these products will pass through defective tank roofs and be barely noticable. These losses of gasoline and naphtha in the average refinery through defective tanks constitute a very appreciable item when considered over a year"

P. I. W. tanks are built tight and stay tight. For more than 28 years the oil trade has recognized the P. I. W. storage tank as **the tank without a defect.**

To secure an additional big saving in low insurance rates, this company further recommends self-closing gas tight gauges and geared windlasses with cable guides—and a careful study of and close adherence to P. I. W. tank specifications.

The Petroleum Iron Works Co.
Sharon, Pennsylvania

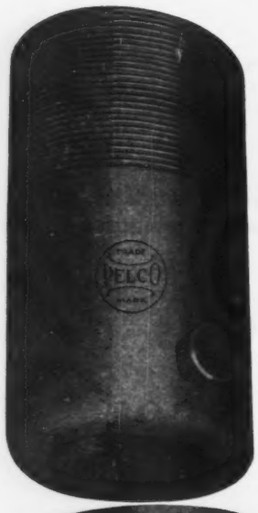
New York . St. Louis Houston
Tampico San Francisco

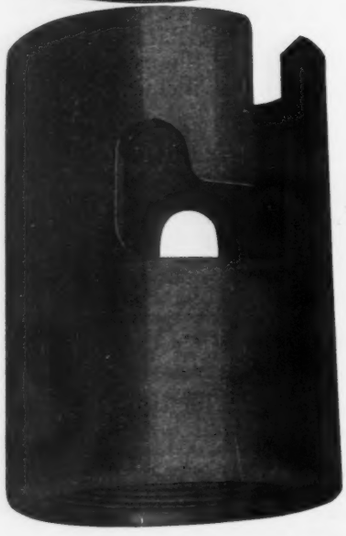
P.I.W.
STEEL PLATE CONSTRUCTION

Reg. U. S. Pat. Off.

Pelican Well Tool & Supply Co.

General offices: Shreveport, La.





The Family

Mostly, and for years past, we have talked to Oil Men about PELCO Rotary Fish Tail Bits. Not because we didn't make other equipment, but because we couldn't talk about it all and do any of it justice. Some one item had to be featured and it fell to the lot of PELCO Bits.

What is probably the most unique guarantee in America has been made a condition of their sale. If you buy a PELCO Bit it is with the understanding that it must perform more satisfactorily than any other bit within your experience. Otherwise you may return it at our expense and we will refund the purchase price without quibble.

"J" Tools

Other members of the PELCO Family are just as fine, in their way. Notice the "J" Slot Liner Setting Device on this page, with the two halves illustrated separately and engaged.

The "J" Tool is the most convenient and successful liner setting device thus far devised. The upper, or pin half may be used indefinitely, and the lower, or "J" half is inexpensive.

If you have used PELCO Bits or other PELCO Products, you feel that it isn't necessary to inquire further. The Trade-Mark tells the story. It guarantees that the threads are smoothly and accurately turned. It pledges you good materials, well adapted.

"J" Tool Liner Setting Devices are made in sizes to set any liner. In each size required, customers generally order one pin or male half, and several "J" or female halves.

Write for prices

Pelican Well Tool & Supply Co.

General offices: Shreveport, La.

M
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PELCO Choker Nipples

PELCO Choker Nipples are forged and punched from solid steel, and machined with absolute accuracy.

They take a place of honor in the PELCO Family, alongside Rotary Shoes, Lead Seals, Tool Joints, Special Pipe Tongs, Packers, Swaged Nipples, Drill Collars, Fishing Tools and endless other guaranteed products.

Write for prices and descriptive matter on any PELCO Product you are interested in.

Stewart Sucker Rod Hooks

The PELCO-made hook illustrated here is forged from tool steel and swivels on ball bearings. It is finely balanced for strength and ease in handling.

The illustration on the left shows the latch raised; on the right, lowered. There is nothing about this safety device to catch the hand of the operator. It enables the hook to slip through rigging or past any obstruction without catching. It works smoothly and easily, yet sets up instant resistance to any tendency on the part of the load to jump out.

The Stewart Sucker Rod Hook has been used successfully for many years.

Prospecting for Oil With Diamond Drill

Mostly used in locating oil pools and cost not as great as some might think

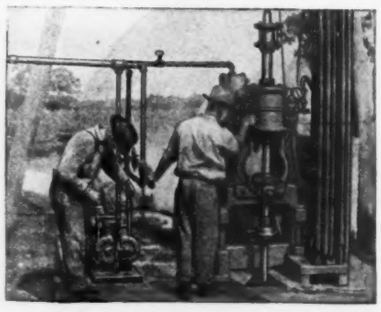
By J. S. Mitchell, of Chicago

DURING the last year or two there has been a gradual change in the method of prospecting and developing new oil lands. For many years this class of work was left almost entirely to "wildcatters" the larger companies buying the oil as it was produced or taking over the wells or properties after they reached the producing stage. The oil industry owes much to the wildcatter. Had it not been for him and his unbounded optimism the oil industry would have lagged many years behind its present state of development. Much ridicule and abuse have been heaped upon the head of the wildcatter. He is a shrewd, foresighted business man when the oil comes in but in failures has a good chance of being called a fool or a swindler. The pioneer in oil production, like the gold prospector who takes to the hill with a grub stake and a burro, is sure to be followed when a discovery is made by promoters and confidence men who are little concerned about prospecting, their chief aim being to sell stock in their particular enterprise. When the promotion is on a large scale, a well is sometimes drilled. The well is generally large to take care of the enormous flow that is promised. In locating the hole, geology and engineering study are of litttle importance but in some miraculous way the hole is known to be just above the oil sands when more money is needed.

In the past the average depth of holes was much less than it is today. As the depth of hole has increased the drilling equipment has been enlarged and strengthened to handle the greater load, but in most respects the standard or rotary rig has undergone little change. For depth up to 700 or 1000 feet in formation favorable for its use the percussion type drill is more efficient than any other, but in very deep holes the cost mounts rapidly due to the necessity of using casing not only to hold back caving material but to cut off water when encountered. When water stands in the hole the blow of the tools is retarded through the cushioning effect and friction on the line. Where it is desired to carry a hole to a great depth the usual practice is to start with very large casing in order to provide for a number of lines to be set as conditions demand. When long heavy lines of casing are necessary and the working strains are greater more accidents occur resulting in considerable delay and expense fishing for casing or lost tools.

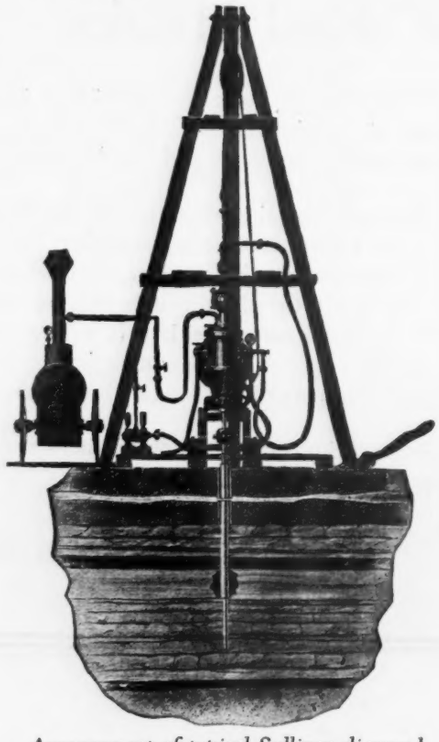
Rotary Drill

The rotary drill in sand or very soft formation attains great depths without long lines of casing by using mud fluid to plaster the walls and through its weight counteracts the inward pressure of the walls of the hole. In drilling through formation that contains little hard rock the rotary drill is most efficient. It is at is best when drilling for oil sands of known depth so that casing can be set at the proper time and avoid the danger of sealing off the sands with mud fluid. In prospecting virgin territory where the depth of the oil sands is unknown the driller must be very careful to avoid passing through oil without knowing it. In some instances in Texas oil sands have been located by analysis of cuttings taken at fixed intervals while drilling, although there was nothing to indicate that the drill had passed through oil.



On derrick floor using diamond drill

Luck played a much larger part in the prospecting of the past than it does today. The hit or miss method is gradually giving away to a systematic study of geological conditions. Forced by a combination of circumstances to take a hand in exploration and production the larger companies are bringing to bear that same painstaking study and investigation that have accomplished such wonders in oil refining. Deep work often in remote sections of this counthy or foreign lands called for expenditures that could only be provided by strong companies, and these companies realizing that their future depended on new fields to take the place of depleted territory are building organizations for conducting exploration work on a large scale.



Arrangement of typical Sullivan diamond drill outfit

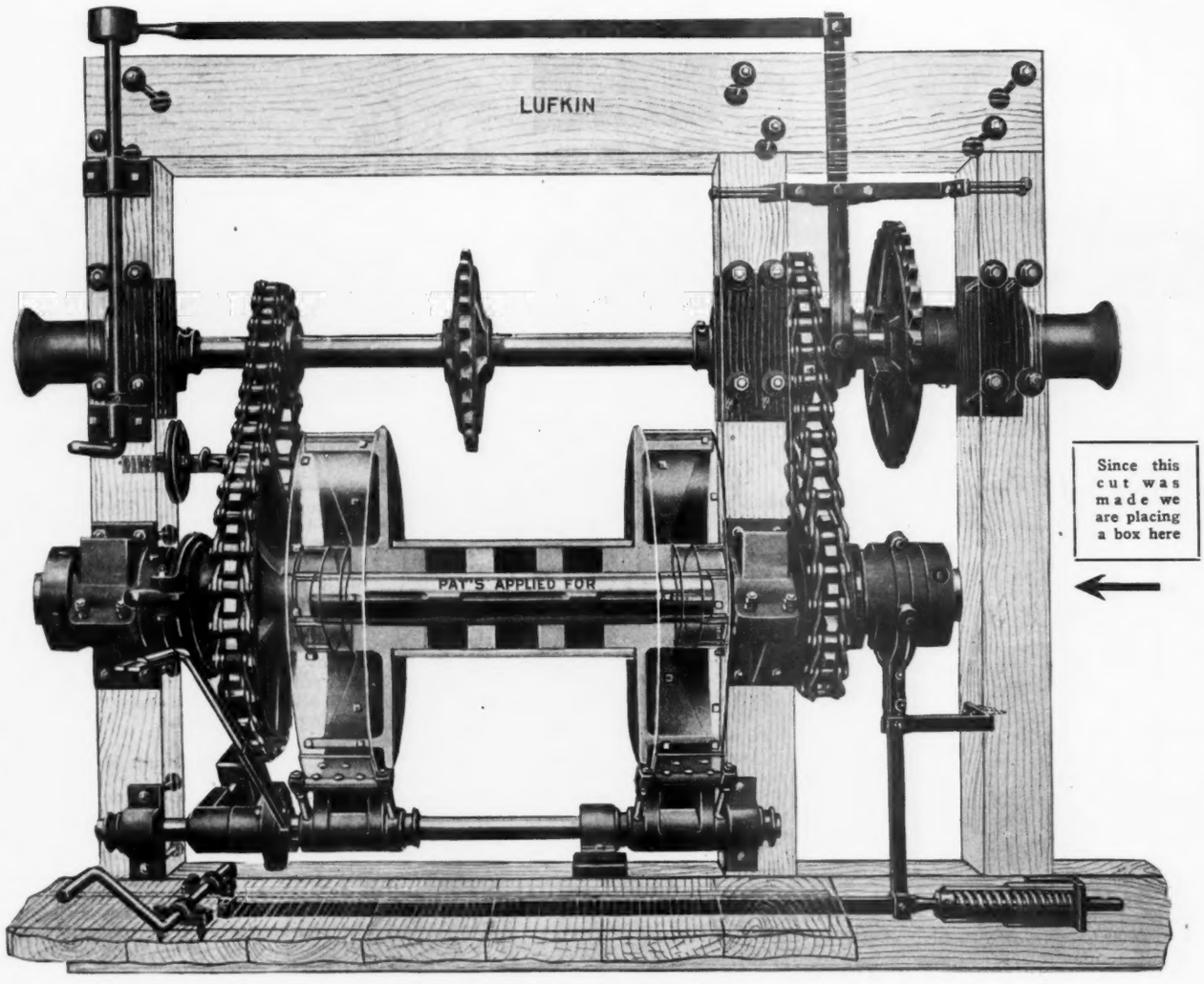
For much of this work in unproven fields the diamond drill has the advantage over other types as it is a much lighter outfit and produces a core of all solid material penetrated. It is possible with the core to identify the various strata beyond a doubt, thus determining whether or not the hole is in favorable formation and at what point oil would be reasonably expected. Diamond drill holes of from 4000 to 6000 feet in depth are not uncommon and the possibilities of trouble in drilling great depth is not increased at the same ratio as with cable tools, neither does the weight of outfit for great depth increase in the same proportion. This is a very important consideration particularly in remote sections. A cable rig equipped with casing for a depth of 3000 feet weighs from 125,000 to 250,000 pounds, depending on the formation. In the fields south of Tampico, Mexico, rotary outfits with cable equipment and camp added have amounted to 250 tons. Moving this amount of equipment through rough country and drilling one prospect hole 2500 feet deep means an outlay of around $150,000.00 for operating costs. A diamond drill outfit complete, excepting camp, for a hole of this depth will weigh from 50,000 to 60,000 pounds and if equipped with sectional boilers may be knocked down for handling on mule back. In principle the diamond drill resembles the rotary drill more than the standard rig. Hollow flush coupling rods are used and the drill itself is a self contained unit so arranged that the rods are rotated and raised or lowered by a hydraulic cylinder acting direct from the line of rods. The hoist is also an integral part of the machine. In the larger size both the hoist and the hydraulic feed cylinders are capable of handling from 30,000 to 40,000 pounds of drill rods. When drilling at great depth all excepting about 900 feet of rods is carried by the hydraulic cylinder and at no time is the full weight permitted to rest on the diamond bit. The rotating speed averages around 250 revolutions a minute and the feed from five to eight feet per hour while drilling solid rock. In soft material a fish tail bit and mud fluid are used the same as with the rotary. The drilling speed or rate of advance in loose material is somewhat less than the rotary, but the speed in hard rocks is greater than either the cable or rotary rigs, and the harder the rock the greater the advantage in cutting with diamonds.

Initial Cost High

The initial cost of diamonds is high, but the cost per foot of drilling is comparatively small. The bit usually consists of eight stones weighing from 2½ to 3 carats each. The best grade which is the most economical to use sells at $125 per carat, making a cost of from $2,500 to $3,000 for the bit. The per foot cost for diamonds in ordinary oil formation averages between 25 and 50 cents. The diamonds are the black opaque, non-crystalline variety, known as carbon and are found only in Brazil. These are set in a soft iron bit by drilling and cutting holes of suitable size and shape then drawing the metal close around them with caulking tools. All stones are set to cut on the face but four set to cut out clearance on the outside and four to cut clearance on the inside.

One criticism of the diamond drill in oil work that is often made is that it does not

The Lufkin-Jones Draw Works



The Superior Features of this Draw Works Are:

Double Asbestos Brake Lining—8″ wide
Steel Clutches—Properly Machined
Line Shaft 3 15/16″—Drum Shaft 5 15/16″

Drums cannot come loose—yet can easily be replaced.

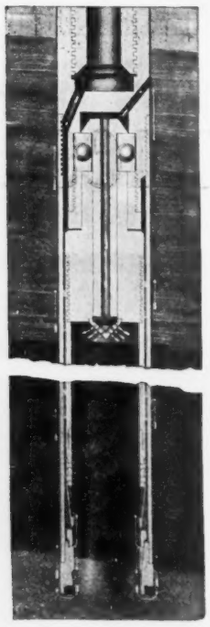
WEIGHT 9000 LBS.

All Wearing Parts Are Bronze Bushed

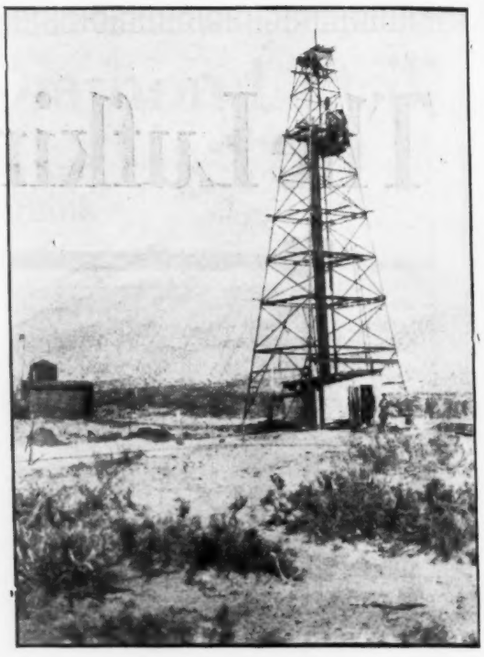
Lufkin Foundry & Machine Co.

Lufkin, Texas

Well drilling with diamond drill



"Getting Evidence" with Sullivan double tube core barrel



Derrick at Van Horne, Texas, where diamond bit is in use

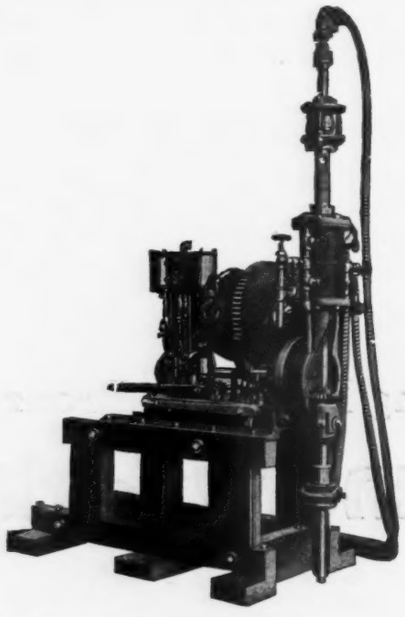
drill a large hole. There is no mechanical reason why it cannot drill a large hole, but in prospecting or drilling to locate oil a two-inch core from a three-inch hole will give as much information on geological conditions as a large hole and will give far more information than the non-coring type of drill regardless of size of hole. Drilling a larger hole would call for larger and heavier equipment, which is unnecessary when it is desired to prospect with a view to locating an oil pool rather than prepare for a large production. In exploration work the important thing is to locate oil. The diamond drill is primarily intended for work of this kind and particularly well adapted for it, as it furnishes absolutely accurate data of underground conditions at a minimum cost.

Cares for Big Production

Some of the diamond drills now on oil drilling are equipped with fittings for 4-inch casing and drilling in with 3⅝-inch bit, although this is not the maximum size that may be used it is large enough to take care of considerable production. The production of the great majority of wells can be handled easily through a 4-inch pipe. In the Mexican field where pressures are high a 4-inch pipe will take care of from 25,000 to 50,000 barrels of oil a day, depending on depth, temperature, percentage of gas and viscosity. Just how much the size of pipe has to do with the production of the well is difficult to determine. In a pumping well there is little advantage in having a casing larger than necessary to take care of production. In a high pressure well the size of casing will have some effect on production, but the amount of flow depends more on the porosity of rocks or capacity of channels leading to the point of contact with the casing. The friction in the larger casing is less, but if the flow to the casing is less than the capacity of the casing a smaller line will serve as well. If the size of casing determined the production of a well an 8-inch well would produce four times as much as a 4-inch well and this is certainly not the case. Flush production when there is considerable gas with the oil is greater in the large casing, but there is a growing tendency to throttle high flush production, thus insuring uniform flow with less danger of drawing in sand and water and this will also maintain gas pressure for a longer period.

Big Holes

One reason that it has been the practice to drill large wells is that neither the rotary nor the standard rig can drill a hole smaller than six inches efficiently and with the standard rig it is necessary under some conditions to start holes twenty inches in diameter in order to provide for the necessary lines of casing to cut off water. Assuming a hole is enlarged at the bottom a casing is simply a flow line to the surface, and there is no good reason why it should be larger than the surface flow line, except in pumping wells, where the casing must be large enough to operate the pump properly. One interesting feature of the diamond drill is the method employed for controlling high gas or oil pressures when drilling or removing rods. An oil saver or packing box is provided with a series of cup leathers designed for high pressure. The rods, having flush joints, pass through the packing box making a safe, tight joint to take care of any pressures that may be encountered suddenly. When it is desired to move the rods under pressure a sheave wheel is attached to the top of the rods. The hoisting rope is passed through a sheave at the floor, then over the sheave on the rods and the end of the rope attached to the floor on the opposite side of the machine. The rods are then allowed to rise under control of the hoisting brake and are removed in 10-foot sections, being held by the chuck while each length is removed. With this arrangement it is possible to raise the bit to a point between the valve and the packing box, after which the valve is closed and the packing box removed.



A Sullivan diamond core drill, capacity 200 to 1600 feet, taking 1 1-8 inch core

Maximum Hole

The application of diamond drills to drilling large holes has been given some consideration, but in all probability the maximum size will be somewhere between four to six inches. From a purely mechanical standpoint it is a simple matter to increase the size of hole, but this would mean a heavier outfit and consequently higher operation and transportation costs. The field of the diamond drill is in prospecting; or drilling producing wells where a casing of about four inches will take care of production. It is particularly well suited to deep prospecting and it is in these fields that it will be generally used. Where a large hole is desired and oil is known to exist such as in off setting wells, drills cutting large holes are better adapted.

It is not claimed for the diamond drill that it is destined to supplant the rotary or standard rig in all classes of work. There is a field for each, but the diamond drill is rapidly establishing itself as an aid to geologists in conducting oil exploration work accurately and intelligently, and up to certain limits it will be used for drilling producing wells. This is particularly true of deep work or when drilling in remote sections where roads or facilities for transportation are poor. Diamond drills are used in the oil fields of Illinois, Oklahoma, Texas, Wyoming, Washington, California and Mexico. Although the formations vary from the soft upper stratum in Mexico to the hard lava in Washington no unusual difficulty has been encountered in completing holes in any of these fields. The deepest hole drilled to date was to a depth of 5000 feet in Southern Oklahoma. This work was done on contract by the Sullivan Machinery Company of Chicago, which concern manufactures practically all of this class of equipment.

For speed—

Sullivan Diamond Drills

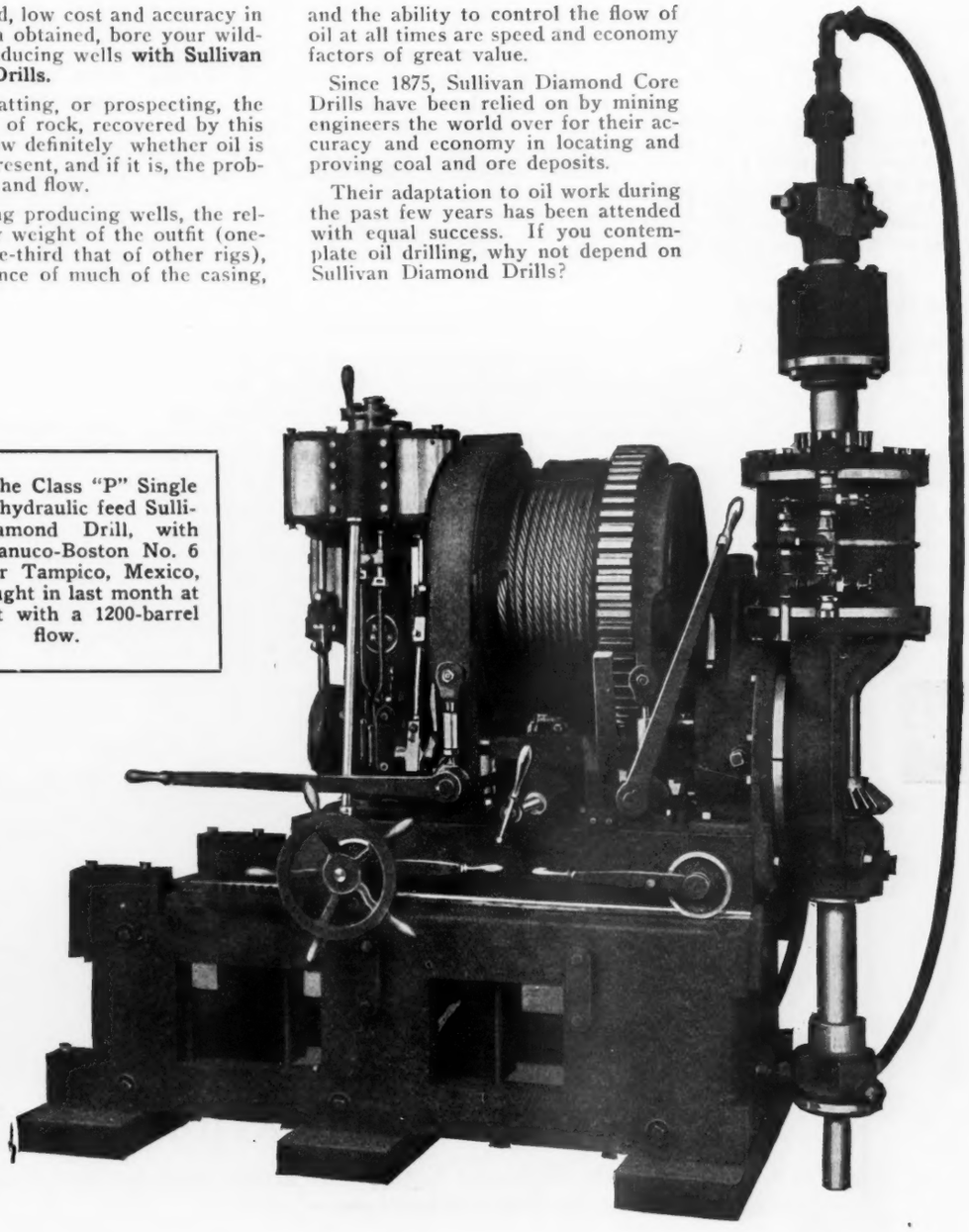
For speed, low cost and accuracy in information obtained, bore your wildcats or producing wells **with Sullivan Diamond Drills.**

In wildcatting, or prospecting, the solid cores of rock, recovered by this means, show definitely whether oil is or is not present, and if it is, the probable grade and flow.

In drilling producing wells, the relatively low weight of the outfit (one-fifth to one-third that of other rigs), the avoidance of much of the casing, and the ability to control the flow of oil at all times are speed and economy factors of great value.

Since 1875, Sullivan Diamond Core Drills have been relied on by mining engineers the world over for their accuracy and economy in locating and proving coal and ore deposits.

Their adaptation to oil work during the past few years has been attended with equal success. If you contemplate oil drilling, why not depend on Sullivan Diamond Drills?



This is the Class "P" Single cylinder hydraulic feed Sullivan Diamond Drill, with which Panuco-Boston No. 6 well near Tampico, Mexico, was brought in last month at 2153 feet with a 1200-barrel flow.

Write for 68 page Diamond Drill catalogue No. 4269

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Drilling Costs in Various Fields

Estimates are given for wells in Texas, Louisiana, California, Mexico, etc.

DUE to returning normal conditions, the interest in drilling costs in various fields of the United States and Mexico has increased recently, and for that reason The OIL WEEKLY has gathered first hand information from a number of fields.

The estimates given for the various fields are gathered from a number of sources and do not represent the exact costs for a big company, for instance, where it owns much material has large forces specially trained and keeps trained forces at work all the time. The costs given are average ones and were compiled as of December 15. The estimates follow:

WELLS IN CALIFORNIA

Well in Kern County

Depth of well, 2000 ft.	
Cost of rig complete (cable tools)	$ 6,000
Casing and tubing	13,500
Labor, or drilling cost	9,000
Fuel and water	1,800
Tankage and pumping equipment	6,000
Drayage	1,500
Percentage margin for accidents	2,000

Orange or Los Angeles County

Depth of well, 3300 ft.	
Cost of rig, complete (rotary)	$ 6,000
Casing and tubing	20,000
Labor or contract drilling	30,000
Fuel and water	7,200
Tankage and pumping equipment	6,000
Drayage	2,000
Percentage margin for accidents	10,000

These figures represent the cost of individual wells, and may be discounted ten to twenty per cent in calculating well costs where a large number of wells are being drilled by the same company. Savings effected by quantity purchases of material, the prorating of fuel and water to several wells in the same district, and the transfer of interchangeable equipment from one test to the other make the individual well costs lower when figured collectively.

* * *

IN MEXICO

It was not possible to get itemized figures on costs of drilling in the Mexican fields, but an operator in Mexico, familiar with the usual total costs, estimated that a well in Panuco field would cost between $40,000 and $45,000 completed while in the Southern fields the costs would be between $80,000 and $90,000 completed. The costs of completing wildcat wells in Mexico run between $125,000 and $150,000, according to distance from good roads.

WELLS IN OKLAHOMA

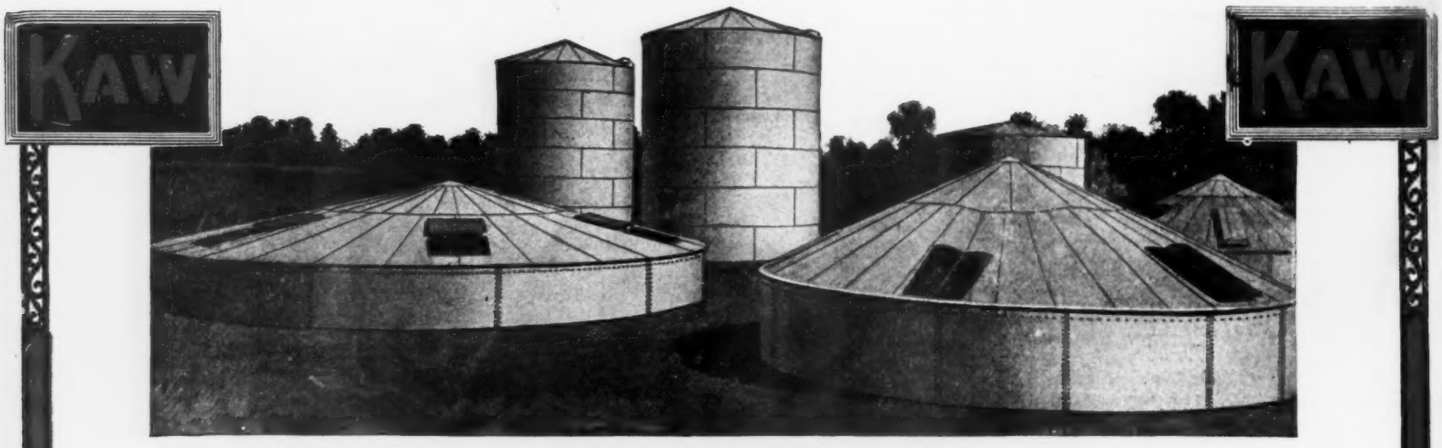
Osage County—(Burbank Pool)

The cost of drilling a well to the pay sand in the Burbank pool of western Osage County is itemized as follows:

Total depth of well, 2843 feet.	
Standard rig complete with irons	$ 4,000.00
Drilling contract at $4.50 per foot	12,793.50
Teaming material to location	2,863.00
Trucking and freight	1,384.00
Miscellaneous equipment	608.00
2248 ft. 8¼-inch casing 28-lb	4,518.48
2800 ft 6⅝-inch casing, 24-lb	4,700.00
Labor	5,365.00
Fuel	1,485.00
Water	786.00
Initial shot	550.00
Allowances for unforeseen acccidents	3,000.00
Grand total	$ 42,051.98
Salvage if an oil well	3,500.00
Net cost of oil well	$ 38,551.98
Additional salvage if dry hole	10,500.00
Net cost of dry hole	$ 28,051.98

Okmulgee County

The cost of drilling a well in Okmulgee County to a depth of approximately 2900 feet, is itemized below. While this estimate is made for drilling in 15-11, it applies to practically



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all of the fields in the surrounding counties where production is found at this depth:

Total depth of well, 2925 feet.	
Standard rig complete	$2,500.00
Repairs to rig during drilling	350.00
Drilling contract @ $2.25 per ft	6.581.25
Roustabout labor and slush pit	500.00
Teaming 100 tons to location	850.00
55 ft 50 lb 12½-in casing	138.05
500 ft 40-lb 10-in casing	1,005.00
1900 ft 28-lb 8¼-in casing	2,603.00
2400 ft 24-lb 6⅝-in casing	2,644.00
2900 ft 17-lb 5 3/16-in casng	2,241.00
1 250-bbl water tank	310.00
1000 ft 2-in water line	227.00
1320 ft 2-in gas line	264.00
Water	350.00
Fuel	875.00
Shot	500.00
Installaton of individual pumping outfit	3,600.00
Allowances for unforseen accidents	7,000.00
Grand total	$32,558.30
Salvage if an oil well	2,500.00
Net cost of oil well	$30,058.30
Additional salvage if dry hole	11,000.00
Net cost of dry hole	$19,058.30
Plugging dry hole	800.00
Total cost of dry hole	$19,858.30

Creek County

The cost of drilling a well in Creek County to a depth of approximately 2700 feet, or to the Dutcher sand depth, is itemized about as follows:

Total depth of well, 2730 feet.	
Standard rig complete	$2,835.00
Drilling contract @ $3.25 per foot	8,823.75
Cleaning out @ $100 per day for 24 days	2,400.00
Teaming, roustabout labor and slush pit	1,976.54
78 ft 15½-in casing	446.16
406 ft 12½-in casing	1,449.42
930 ft 10-in casing	2,427.30
2440 ft 8¼-in casing	4,611.60
2679 ft 6⅝-in casing	4,152.45
2710 ft 2-in tubing	840.10
Water tankage, 250-bbl tank	175.00
1693 ft 2-in water line	406.26
3492 ft 2-in gas line	977,69
Fuel and water	3,161.99
Shot, 60 qts	160.00
Connection fittings	209,45
Allowance for unforseen accidents	2,220.00
Grand total	$37,197,71
Salvage if an oil well	5,360.67
Net cost of producing well	$31,837.04
Additional salvage if a dry hole	11,260.00
Net cost of a dry hole	$20,577.04

These figures are taken from the records of companies operating extensively in the counties listed and are not the actual cost taken from any particular well but are the estimates which these companies base their operations on, as of December 15, 1921.

Carter County (Hewitt Field)

The approximate cost of drilling a well to a depth of 2300 feet in the Hewitt field of Carter County is itemized as follows:

Total depth of well, 2300 feet.	
Standard rig erected and complete	$3,400.00
Drilling contract @ $5.50 per foot	12,650.00
Teaming, labor and slushpit	450.00
Additional labor	2,000.00
250 ft 15½-in 70-lb casing @ $5.03 per foot	1,257.50
970 ft 12½-in 50-lb casing @ $3.14 per foot	3,045.80
1150 ft 10-in 35-lb casing @ $2.01 per foot	2,131.50
1500 ft 8¼-in 28-lb casing @ $1.61 per foot	2,415.00
2100 ft 6⅝-in 20-lb casing @ $1.12 per foot	2,352.00
2300 ft 5 3/16-in 17-& casing @ $.94½ per ft	2,173.50
1 250-bbl water tank	175.00
Fuel and water	2,805.00
Casing shoes	224.55
Casing crew	150.00
Shot	80.00
Allowance for unforseen accidents	2,500.00
Grand total	$37,989.85
Salvage if an oil well	3,500.00
Net cost of producer	$34,489.85
Additional salvage if a dry hole	9,450.00
Net cost of dry hole	$25,039.85

* * *

WELLS IN KANSAS

Butler County

The cost of drilling a well to a depth of 2800 feet in the Fox Bush field is itemized as follows:

Total depth of well, 2800 feet.	
Standard rig complete	$2,100.00
Repairs to rig while drilling	100.00
Drilling contract @ $2.00 per foot	5.600.00
Roustabout labor and slush pit	500.00
Teaming 122 tons of material to location	640.50
40 ft 70-lb 15½-in casing	177.60
330 ft 50-lb 12½-in casing	874.50
660 ft 40-lb 10-in casing	1,272.00
775 it 35-lb 10-in casing	1,433.75
1869 ft 28-lb 8¼-in casing	2,853.60
2509 ft 24-lb 6⅝-in casing	2,960.60
2769 ft 17-lb 5 3/16-in casing	2,319.03
1 250-bbl water tank	245.00
500 ft 2-in water line $.19¾ per foot	98.75
500 ft 2-in gas line $.17¾ per foot	88.75
Water	147.00
Fuel	980.00
Shot	359.00
Installation individual pumping outfit (including tubing, rods, engine, belt and setting)	3,199.28
Allowance for unforseen expenses	400.00
Grand total	$26,349.36
Salvage if an oil well	4,957.59
Net cost of oil well	$21,391.77
Additional salvage if dry hole	10,965.74
Net cost of dry hole	$10,426.03
Cost of plugging	640.00
Total cost of dry hole	$11,066.03

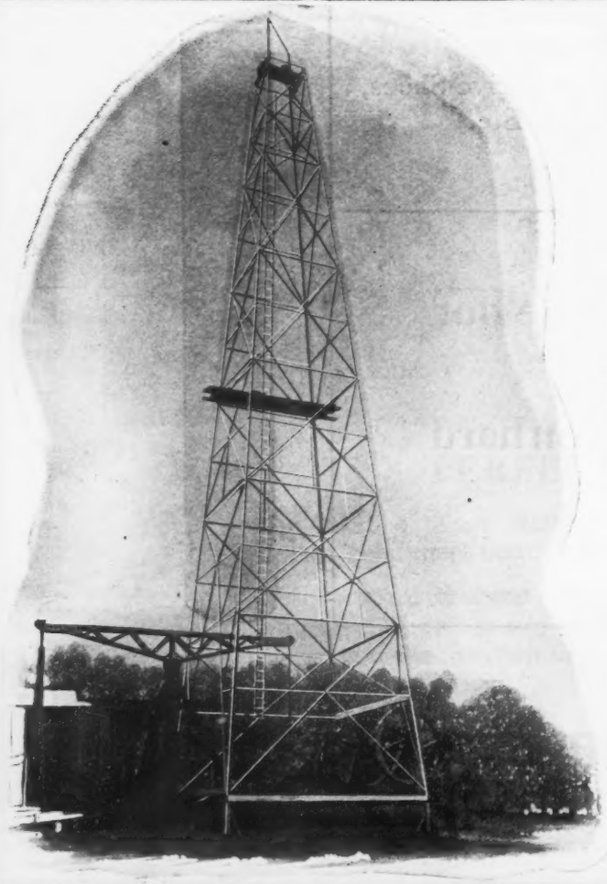
The figures as listed estimate the cost of drilling a well in the Fox Bush field of Butler County but by making certain allowances can be applied to other sections of Kansas where wells are drilled to the 2800-foot depth, based on December 15 costs.

* * *

WELLS IN TEXAS

500-Foot Well, Wichita County

Slush pit	$25.00
Drilling, 500 ft @ $1.50 per foot with spudding machine furnished complete by contractor	750.00
Fuel and water—	
Motor fuel for engine power	25.00
Water service	75.00
500 ft 6⅝-in 17-lb casing	425.00
Freight, hauling and miscellaneaus expense	25.00
Tubing, rods, jack and miscellaneous connections necessary to hook up completed well to central power plant	200.00
Total	$1,525.00



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300-Foot Well, Wichita County

Slush pit	$25.00
Drilling, 300 ft @ $1.50 per foot with spudding machine furnished complete by contractor	450.00
Fuel and water—	
Motor fuel for engine power	15.00
Water service	50.00
300 ft 6⅝-in 17-lb casing	250.00
Freight, hauling and unforseen expenses	25.00
Tubing, rods, jack and miscellaneous connections necessary to hook up completed well to central power plant	175.00
Total	$990.00

1000-Foot Well, Wichita County

96 ftx22 ft rotary derrick erected	$650.00
Drilling 1000 ft hole at $3.25 per foot	3,250.00
Slush pit	35.00
Fuel and water—	
10 days' fuel oil, 25 bbls a day @ $2 per bbl. delivered	500.00
10 days' water service at $15 per day	150.00
Freight, hauling and unforseen expenses	200.00
1000 ft 6⅝-in 20-lb casing	975.00
Tubing, rods, jack and miscellaneous connections necessary to hook up completed well to central power plant	1,000.00
Total	$6,760.00

This estimate will be found fairly accurate for Burkburnett fields and Electra field, but allowance must be made for remoteness of location of test from supply base.

1600-Foot Well, Wichita County

96x22 ft rotary derrick erected	$650.00
Drilling 1600 ft hole @ $3.50 per foot	5,600.00
Slush pit	35.00
Fiel and water—	
15 days' fuel oil, 25 bbls a day @ $2.00 per barrel delivered	750.00
15 days' water service at $15 per day	225.00
Freight, hauling and unforseen expenses	300.00
1600 ft 6⅝-in 20-lb casing	1,575.00
Tubing, rods, jack and miscellaneous connections necessary to hook up completed well to central power plant	1,500,00
Total	$10,635.00

This estimate will be found fairly accurate for the Burkburnett fields, Electra and Kemp-Munger-Allen fields, but allowance must be made for remoteness of location of test from supply base.

2500-Foot Well, South Bend Pool, Young County

84x22 ft sway-braced standard rig with 6-in Ideal rig irons, California pattern		$3,000.00
Drilling 2500-ft hole by contract at $4 per foot		10,000.00
Fuel and water—		
45 days' gas at $15 per day	$675.00	
45 days' water service at $10 per day	450.00	1,125.00
Freight and hauling		2,000.00
Tanks, flow lines, etc.		1,500.00
300 ft 15½-in 70-lb casing		1,400.00
900 ft 12½-in 50-lb casing		2,700.00
1700 ft 10-in 40-lb casing		3,480.00
2100 ft 8¼-in 32-lb casing		3,380.00
2500 ft 6⅝-in 24-lb casing		2,850.00
100 qt shot nitroglycerine		350.00
Add 10 per cent for unforseen expenses		3,178.50
Grand total		$34,963.50
Less estimated salvage for producing well		5,685.00
Net cost of producing well		$ 29,278.50
Less additional salvage if dry hole		4,672.50
Net cost if dry hole		$24,606.00

1900-Foot Well, Bunger District

84x22ft sway-braced standard rig with 6-in Ideal rig irons, California pattern		$3,000.00
Drilling 1900-ft hole by contract at $4 per ft.		7,600.00
Fuel and water—		
35 days' gas at $15 per day		525.00
35 days' water service at $10 per day		350.00
Freight and hauling		2,000.00
Tanks, flow lines, etc.		1,500.00
80 ft 15½-in 70-lb casing		345.00
600 ft 12½-in 50-lb casing		1,800.00
1500 ft 10-in 40-lb casing		3,075.00
1800 ft 8¼-in 32-lb casing		2,900.00
1900 ft 6⅝-in 24-lb casing		2,150.00
Add 10 per cent for unforseen expenses		2,524.50
Grand total		$27,769.50
Less estimated salvage for producing well		3,915.00
Net cost of producing well		$23,854.50
Less additional salvage if dry hole		3,787.50
Net loss if dry hole		$20,067.00

Note—This estimate will be found fairly accurate for completing 1900-foot wells in the South Bend Pool, Young County, also.

Stephens and Young Counties

84x22ft sway-braced standard rig with 6-in Ideal rig irons, California pattern		$3,000.00
Drilling 3400-ft hole by contract at $4.25 a ft		14,450.00
Fuel and water—		
75 days' gas at $15 per day		1,125.00
75 days' water service at $10 per day		750.00
Freight and hauling		2,500.00
Tanks, flow lines, etc.		2,500.00
300 ft 20-in 90-lb casing		1,780.00
500 ft 15½-in 70-lb casing		2,160.00
1000 ft 12½-in 50-lb casing		3,000.00
1750 ft 10-in 40-lb casing		3,580.00
2600 ft 8¼-in 32-lb casing		4,180.00
3100 ft 6⅝-in 24-lb casing		3,525.00
3400 ft 5 3/16-in 17-lb casing		2,680.00
100 qt shot nitroglycerine		350.00
Add 10 per cent for unforseen expenses		4,558.00
Grand total		$50,138.00
Less estimated salvage for producing well		7,890.00
Net cost of producing well		$42,248.00
Less additional salvage if dry hole		7,775.00
Net loss if dry hole		$34,473.00

Note—This estimate will be found fairly accurate for wells drilled in Palo Pinto and Shackelford Counties.

Texas Gulf Coast

The cost of drilling in the Gulf Coast, with variations as to depth and the individual operators' ideas of proper practice, is shown in the figures for an average well at West Columbia:

Derrick, 112 feet, complete		$2,500.00
Drilling—		
90 days at $75 per day	$6,750.00	
500 ft 12¼-in casing @ $3.50	1,750.00	
3000 ft 8¼-in casing @ $2	6,000.00	
3500 ft 6¼-in casing @ $1.65	5,775.00	
300 ft 4¾-in liner @ $1.25	374.00	
100 ft 4¾-in strainer @ $3.00	300.00	
Packers, valves, etc	150.00	21,100.00
90 days' fuel		4,050.00
Water		250.00
Teaming		1,500.00
Rig repairs		1,000.00
Camp expense		1,350.00
Cost completed well		$31,850.00

These figures do not account for depreciation on drilling rig and drill stem, and accordingly no salvage value on the completed well figured. The total of $31.850 is a fair estimate of the actual cost of drilling to 3500 feet, with all allowances for salvage.

Mexia

The cost of drilling to the usual production level at Mexia shows approximately as follows:

Derrick, 112 feet, complete		$2,500.00
Drilling—		
60 days at $75 per day	$4,500.00	
300 ft 10-in casing @ $1.63	490.00	
3000 ft 6⅝-in casing @ $1.22	3,660.00	
Packers, valves, etc	750.00	9,100.00
Fuel, 60 days		6,000.00
Water		2,000.00
Teaming		1,000.00
Rig repairs		1,000.00
Camp expense		900.00
Cost completed well		$22,500.00

Haynesville

In the Haynesville, Louisiana, area, the cost of drilling a well is approximately as follows:

Derrick, complete		$1,200.00
Drilling—		
60 days at $75 per day	$4,500.00	
300 ft 10-in casing @ $1.53	460.00	
2700 ft 6-in casing @ $1.07	2,890.00	
Packers, valves, etc	750.00	8,600.00
Fuel		2,700.00
Water, $20 per day		1,200.00
Teaming		800.00
Rig repairs		1,000.00
Camp expense		250.00
Total cost completed well		$15,750.00

* * *

EL DORADO, ARK.

The cost of drilling the El Dorado, Ark., field is approximately as follows:

Derrick, complete		$1,200.00
Drilling—		
40 days @ $75 per day	$3,000.00	
300 ft 10-in casing @ $1.53	460.00	
2000 ft 6-in casing @ $1.07	2,140.00	
Packers, valves, etc.	750.00	6,350.00
Fuel		1,575.00
Water		400.00
Teaming		600.00
Rig repairs		1,000.00
Camp expense		250.00
Total cost completed well		$11,375.00

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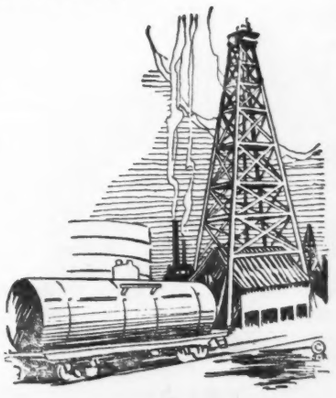


Why California Deep Wells Are Profitable

Money fosters contribute to long life of producers—Operating methods are ideal

By B. V. Ellzey

IT costs more to drill a well in California than in any other major producing area of the country. California oil is low gravity, and the average price at the well, under normal industrial conditions, is lower than the price obtained for oil in the majority of the fields of the country. In spite of these facts, however, the real value of a producing well in California is greater than that of a well in any other part of the world, where the amount of daily production corresponds.

There is a system of balances, a checking and counter-checking of cause and effect, one against the other, which nature has provided in order that industries may thrive under various conditions and circumstances, in different parts of the world.

If the California fields were located contiguous to the light oil producing districts of the Mid-Continent or the East, most of the California wells would not be drilled, and the deposits of oil underlying the surface in this State would constitute a reserve for future exploitation, similar to the reserves embodied in the shale mountains of the Western States.

The natural conditions incolved, however, the geographical isolation of California and the incomparable demand for petroleum products on the West Coast make it not only profitable to develope the fields of low gravity oil in this State, but make it more profitable than in any other section.

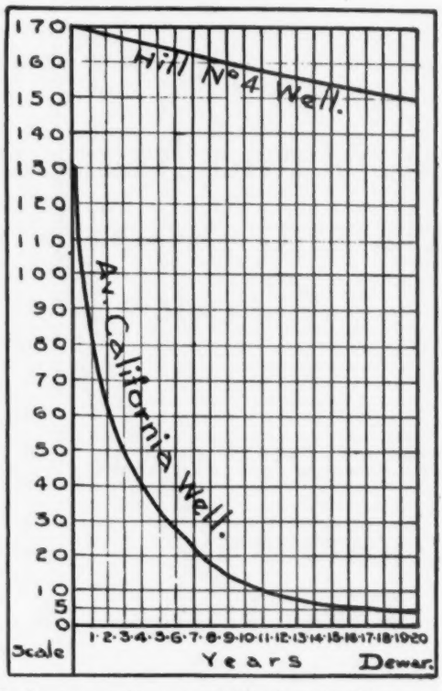
Four Major Factors

There are four major factors which combine to make the deep wells of California worth more, in actual value, than wells of similar depth and similar production in other fields. Two of these factors have been provided by natural causes, and two by the ingenuity of oil producers in this State. Listed in the order of their importance, these factors are:

1. Tenure of life of wells.
2. Availability of duplicate production from many sands in same wells.
3. Ideal operating methods.
4. Stable market schedules.

California represents about all the known conditions and problems in oil field practice. Producing depths range from 60 to 4700 feet. Some light oil is produced from shallow sands, and some of the deepest wells of the State are producing heavy oil. The majority of the crude, taking the whole State into consideration, is heavy, and approximately one-third of it is unfit for refining at all, and goes direct from the well to the furnace, as fuel. By volume, 40 per cent of all the fluid coming from oil wells in the State is water, and there are few wells of the State that do not show any water. Drilling locations vary from the smooth valley to the rocky precipice, and many of the best wells of the State are so located that road building and trail making constituted a big item of expense in their drilling cost.

Naturally the most expensive wells are the deepest ones, as a general rule. But the only radical difference in results obtained from deep wells and shallow wells is in the fact that the deep well represents an extreme case, and stands at the peak of the curve representing cost and recovery. All discussion, therefore, of the reasons why deep wells are profitable will apply with equal strength to the majority of the shallow wells of the State.



Decline curve of average California well. The average well of this State makes a settled initial production of 130 barrels a day, and declines to five barrels at the end of 20 years. At the top is the curve of Union Oil Company's No. 4 Hill, in Purisma field.—Courtesy Union Oil Bulletin.

Daily Average High

The average production of wells in California at the close of 1921 runs about 32 barrels a day. The average first-year production of California wells is 130 barrels a day. The average initial or flush production would be above this figure, but not to any great extent, as it is shown that the average daily production of a typical California well in its third year is 60 down to 50 barrels. And the average daily production of a California well in its twentieth year is 5 barrels.

These averages at first thought make it appear that California wells are generally small producers. On the contrary, there are many wells which flow for years, at a high daily average production. The figures showing the action of a typical well represent the composite of all the wells of the State, including the thousands of very small producers from shallow sands.

It is estimated that the average cost of a 3300-foot well in this State, in 1921 was about $80,000. Many of the wells of the southern part of the State are below 4000 feet. And the cost of such wells often runs to $200,000 or even $250,000. It is said that the Bell well of the Union Oil Company at Santa Fe Springs, recently completed at about 3700 feet, cost the company a quarter of a million dollars. Drilling time of deep wells may run from one to four years. All casing used in drilling is left in the hole at completion, because of its freezing in unconsolidated formations.

Many of the deep wells flow at completion. One remarkable case is that of the No. 5 well on the Burch lease at Brea Canyon, which flowed 2500 barrels a day for 6 years. The depths of wells on this lease run from 4000 to 4370 feet. The Union has a well at Santa Fe Springs which has been flowing from 4600 feet for nearly two years, and has recenetly completed another one in the same field which seems capable of making 5000 to 8000 barrels a day, natural. The famous Hill No. 4 of the Union, in the Purisma field, declined only 80 20 barrels a day in 20 years. After being on production for a year, the Associated's No. 23, Elk Hills was cleaned out the other day and came back a gusher, with a settled production of about 3000 barrels a day.

Oldest Porducers in World

The oldest producing wells of the world are in California, if the records may be relied upon. At Newhall and in Ventura County are wells which have been steady producers for 30 to 40 years. The first well ever drilled in the State, back in 1866-67, is standing flush with the surface, with oil, and a gas bubble breaks on the surface every few seconds. It flowed for more than 20 years.

In addition to the long life of producing wells, the duplexity of productive sands in most fields is a big factor in establishing the real value of deep wells in this State. The fact may be taken, also, as contributing to the long life of the wells, but often times all the sands are exploited simultaneously by perforating casing at the sand levels, so that the mere fact that there is more than one possible producing level may not effect the length of life of the well.

In the new Huntington Beach field, it is established that there are at least three, and maybe four, producing levels, either of which carries oil in commercial quantities. Some of the wells being drilled there are stopping at the first sand, with the idea of going on to the next level when the first becomes exhausted, etc. Other wells drill to the lower level, for the higher gravity oil there, and anticipate getting advantage of the upper sands by perforating casing at upper depths.

Two of the best leases in the deep fields of Orange County are the Chapman and Kramer, of the Union and Standard, respectively. The original producing level on these leases was thoroughly exploited, and when the wells began to decline in production, they were drilled deeper, and a new producing sand, below 4000 feet, has been tapped with gratifying results. During the summer of 1921 the Santa Fe Railroad interests got a producing sand in a wildcat well near the beach in Los Angeles County, which showed for about 300 barrels a day. By late fall production had declined to about 30 barrels a day, and the well was drilled deeper, to another sand. It is not yet completed, but indicates that it will be a profitable well at the new depth.

Depend on Many Sands

There is hardly a field of the State that depends upon one level of production. As soon as one sand becomes exhausted, the holes may be deepened to the next sand, etc. Or in many cases the hole is carried to the lowest produc-

ing level at the outset, and the upper sands are tapped by perforating at their levels.

It is possible, therefore, for one well to be "brought in" several times during its life, and it is this factor which contributes materially to the intrinsic value of a California well. One of the important items in the State oil and gas supervisor's weekly review of operations is the number of wells deepening or redrilling. And statistics show that up to December 24, 1921, no less than 665 wells have been made deeper this year in order to take advantage of lower sands.

Added to the tenure of life of wells, and the duplication of producing levels, should be the ideal operating methods of California producers, and the stable market for California crude.

Because of hazards not obtained in any other fields of the world, California producers have been forced to make inventions of new equipment, development of new ideas, perfecting of methods introduced from other states, until this State now leads the world in scientific production methods. (This statement may be subject to controversy, but is based upon the opinion of several practical oil men who are familiar with conditions in all parts of the country.)

Profit by Experience

Because it is an old producing State, the experience of operators in the years that have passed is transmissable to present day operators, and these experiences form a basis for improvements and innovations that continually make drilling and production methods more scientific and economical.

With unconsolidated formation in practically all the fields, with the dip of subsurface rock strata making it almost impossible to drill a straight hole in many sections, with water sands interspersing oil sands, and the topographical conditions such that drilling materials have to be snaked to the location, or lowered to the derrick floor by cranes, in some cases, the producing company in California must employ men who know more than the feel of the line, and the operator must figure on more expense than the cost of his outfit, and an average allowance for labor and fuel.

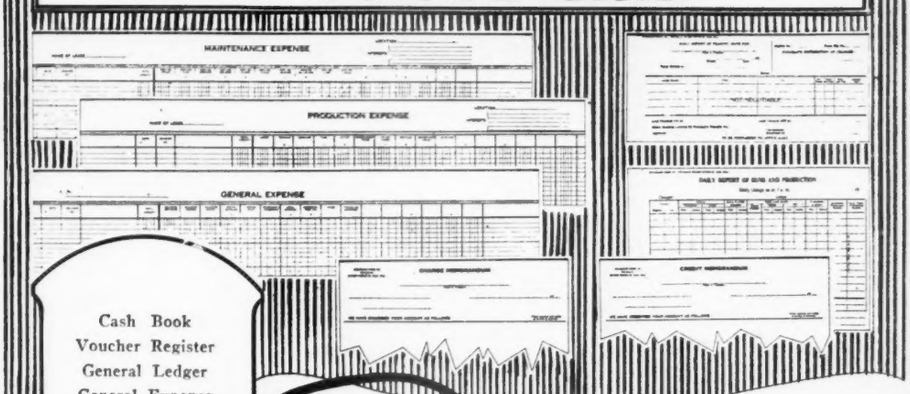
After the well is completed, keeping it on production with the minimum expense has been given a lot of thought and study in California. And it is generally agreed that the most economical methods of operating producing properties to be found anywhere are those in general use in the fields of this State.

While the price of crude oil is low in this State, as compared to other States, it is a price which is not subject to peaks and chasms of variation. There is little change in the purchase price from year to year, and this factor is of tremendous value to the legitimate company, in that it permits a careful calculation of what results may be reasonably expected from every operation, and enables an oil company to do business on a business basis, rather than as a gamble with fate.

The United States Bureau of Mines report on foreign mineral reserves shows that in 1918 and 1919 Japan proper produced 4,106,150 koku of petroleum, a koku being equal to 47.6 United States gallons, or 1.136 barrels. This oil was valued at 72,979,120 yen. A yen normally is equal in value to 50 cents in American money, but because of fluctuations in exchange, the value of the oil at the time of production is impossible to compute. The value of the natural gas produced for the two years was given as 4,250,944 yen.

Oil fires in the United States during 1921 entailed losses totaling $332,654,950, an increase over 1920, when the losses amounted to $330,855,625.

Standardized Oil Accounting and Field Forms



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General Expense
Production Expense
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Production and Maintenance Expense
Warehouse Records of all kinds
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New Device for Flowing Wells Being Used in California

LOS ANGELES, Jan. 14.—Union Oil Company, Shell Company of California, General Petroleum and several smaller operators have installed the pneumatic lift, a patented device for flowing oil from wells which would otherwise be pumped, and are testing the process thoroughly.

The Putnam pneumatic fluid lift makes an application of the natural laws governing the flow of oil from wells, and is claimed by its originators to not only flow the oil, but to control the back pressure, and increase the quality of oil produced.

The device was invented and patented by J. K. Putnam of Tulsa, and is being distributed by the Edgar-Waters Company, in Oklahoma and California. It has been installed in a number of wells in Oklahoma, The Texas Company having three wells in the Hewitt field using it.

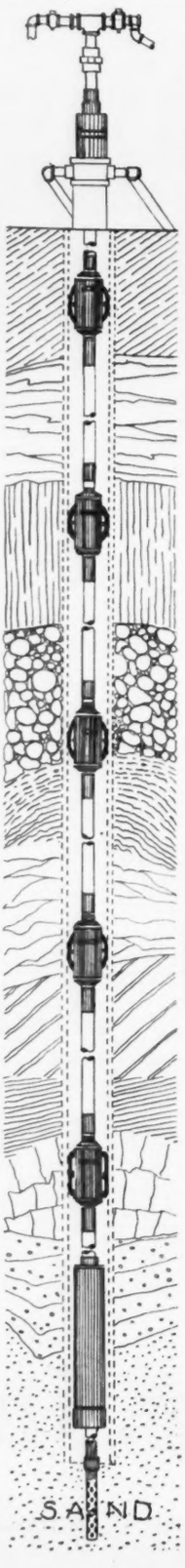
In California it was installed in the Union Oil Company's No. 8 Chapman, at Richfield, on September 14, and in the No. 11 Tonner of General Petroleum on September 28. It is reported that the production of both these wells was increased by the process, though its owners do not make this claim as the chief argument for its use. It is also being used on the No. 1 well of the Jameson Oil Company at Huntington Beach, The Shelby Root and Hogue No. 2 at Richfield, and is being installed on No. 1 Alamitos of the Shell Company at Signal Hill.

The working diagram of the mechanical parts of the device shows a gas accumulator, at the bottom of the well; a bottom control placed as near the bottom of the well as practical, for the purpose of controling the pressure in wells making a big flow of gas; and pneumatic lifts placed at intervals of 500 feet in the tubing. The lifts give a full hole opening, and by their being placed at intervals of 500 feet, the column of oil to be lifted is divided at each lift, obviating the necessity of a sufficient bottom pressure to lift the entire column of oil to the surface. These lifts are controlled from the surface, so that in case the pressure of the well is increased, and it is not necessary to use each lift in the column, they can be left open, and retard the movement of the oil in the tubing.

At the surface is a control valve position indicator, casing head control, regulating valve and roller bearing head, so that the entire mechanism is easily operated from the surface, and the necessity for pulling tubing is said to be eliminated.

At the bottom of the hole a wood plug is placed, provided there is no sand in the well. To take care of the sand flow, the tubing is perforated below the accumulator bowl, and heaving sand is lifted from the hole along with the oil column.

Owners of the process say that an accumulated gas pressure of 100 pounds will lift the oil column, and make a steady flow at the surface. A well making very little gas, they say, will create a 100 pounds pressure, by the use of the accumulator. In case it is impossible to obtain this much pressure, an air compressor is placed at the surface and the air injected outside the tubing to the bottom of the hole for collection in the accumulator.



The accompanying cut shows the Putnam pneumatic fluid lift, with gas accumulator at bottom, and lifts placed at intervals of 500 feet in the tubing. It is used for the purpose of flowing wells with low pressure, controlling the back pressure on the oil sands, and stripping the casinghead gas of its light hydrocarbons by the absorption principle.

In addition to its advantage in flowing a well which would otherwise have to be pumped, the owners of the process maintain that the application of the accumulated gas in lifting the oil column increases the gravity of the oil, involving the principle of the gasoline absorption plant, in stripping the casinghead gas of his gasoline components.

It is also claimed that by maintaining a steady and even back pressure, by means of the gas control, there is less danger of water breaking in at the bottom, the sand is more easily controlled, and the production of oil stabilized.

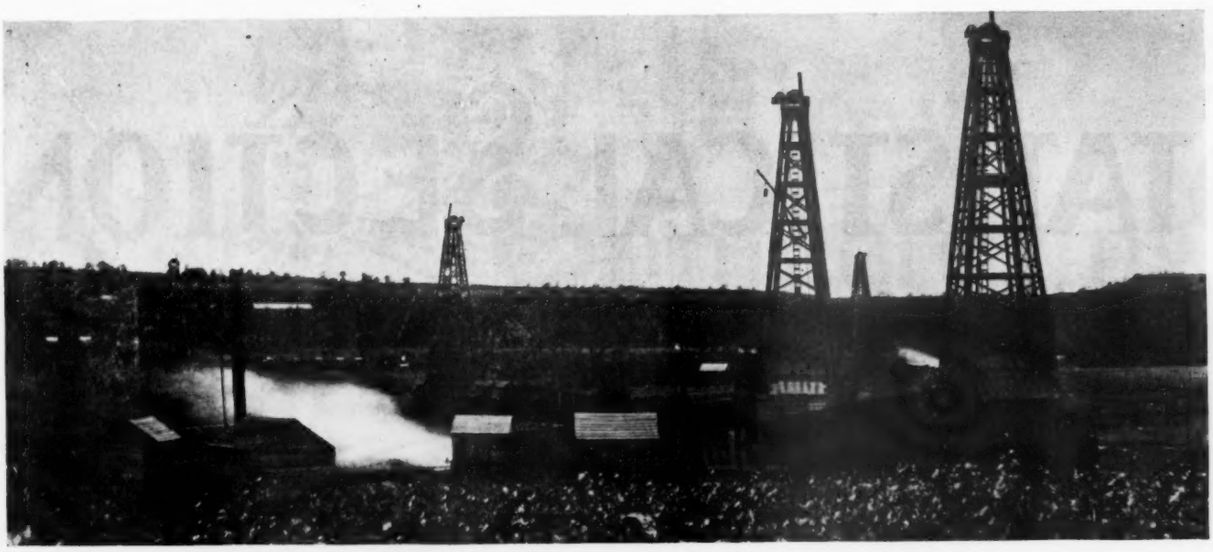
In the operation of water-flooded gas wells, especially in Oklahoma, the device is said to have proven very satisfactory, flowing off the heads of water, and bringing in the drowned wells.

The individual lifts, made in all sizes to accommodate any size tubing, are screwed into the tubing as short joints, and are equipped with a coil spring to make them fit tight in the casing. The device is applicable to any depth well, and the roller bearing head at the surface operates the valves in the lifts, by a simple system of rotation.

The originators of the process claim that it will flow wells for a longer time; will save all superfluous gas; will keep the oil from cutting, regardless of the condition of the well; will flow off water as it comes into the well; will keep up production to capacity at all times; will remove all operating expense; will operate in any depth well; guaranteed for the life of any well, and adjustable to the conditions of any well.

The device is not sold to operators, but under a plan worked out by its owners, it is installed at a nominal cost to the operator, and leased at $2.00 a day, for the life of the well. It is regularly inspected by its owners.

Calculations made by the company distributing the lift, put the production cost of wells in which this mechanism is used at an average of one and one-half cents a barrel.



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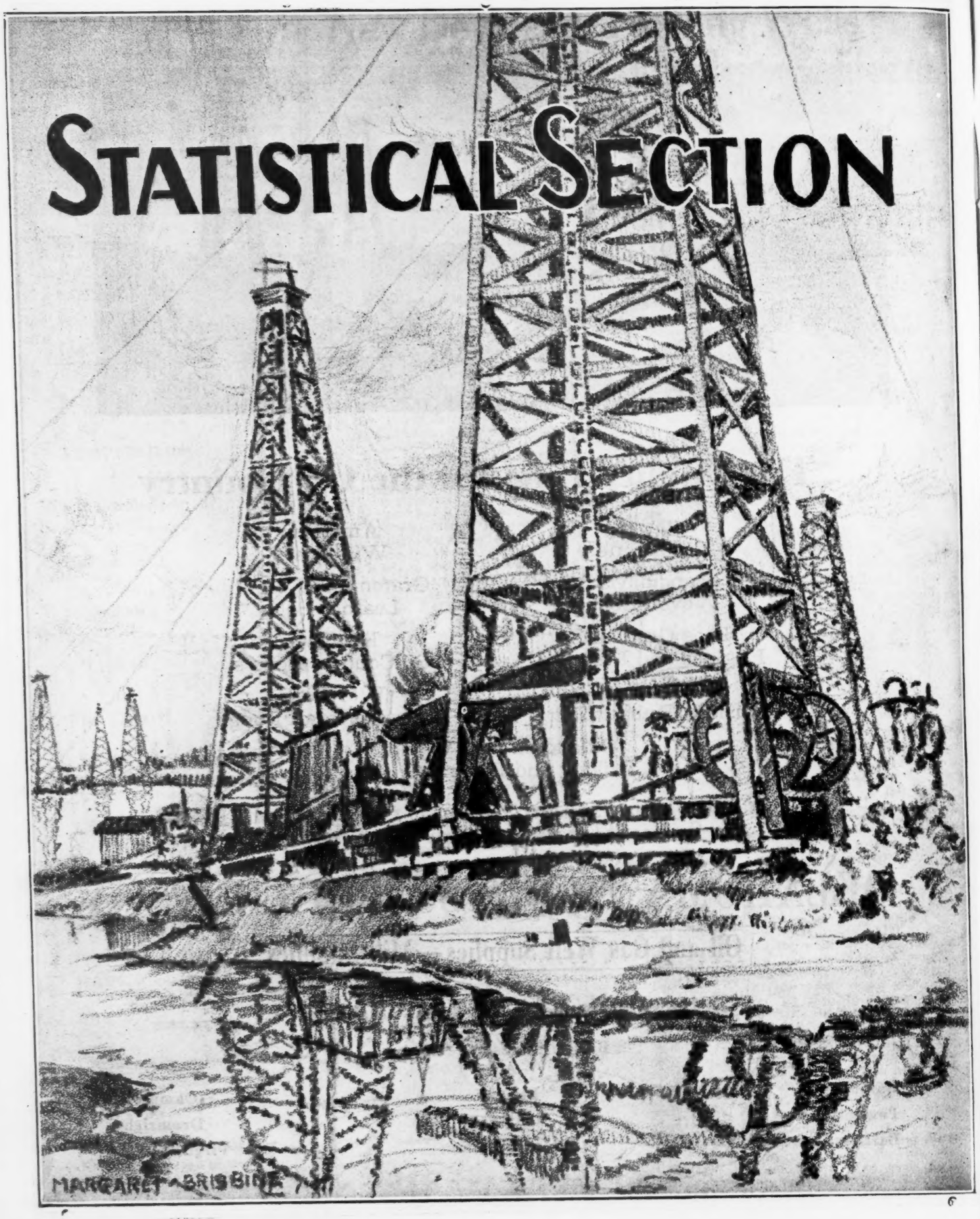
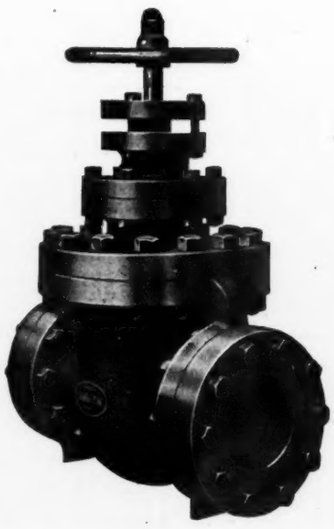


The Ludlow Valve Manufacturing Company



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The Ludlow Valve Manufacturing Company

Branch offices: Pittsburgh, Pa. Kansas City, Mo. Boston, Mass. Chicago, Ill.

Factory: Troy, N. Y.

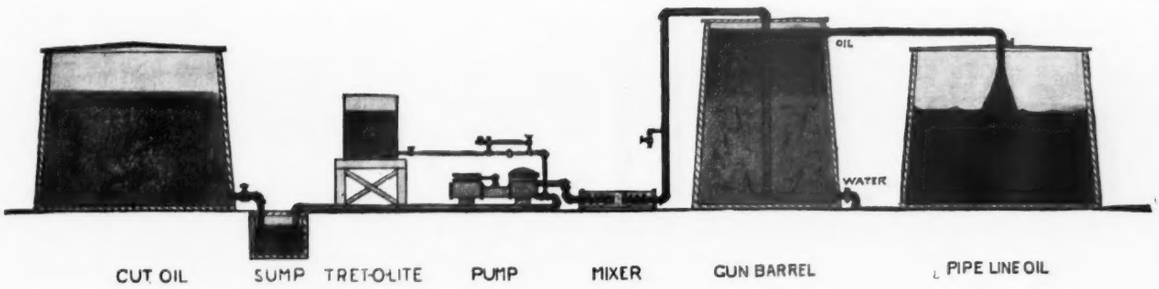
World's Production of Crude Petroleum Since 1857, by Years and Countries, in Barrels of 42 Gallons

Year	Rumania	United States*	Italy	Canada	Russia	Galicia	Japan and Formosa	Germany	India	Dutch East Indies	Peru	Mexico	Argentina	Trinidad	Egypt	Other Countries	Total	Year	Pct. Prod. by U. S.
1857	1,977	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,977	1857	.00
1858	3,560	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,560	1858	.00
1859	4,349	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,349	1859	31.5
1860	8,542	500,000	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	508,578	1860	98.3
1861	17,279	2,113,609	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,130,917	1861	99.1
1862	23,198	3,056,690	29	11,775	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,091,692	1862	98.8
1863	27,943	2,611,309	58	82,814	40,816	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,762,940	1863	94.5
1864	33,013	2,116,109	72	90,000	64,686	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,303,780	1864	90.5
1865	39,017	2,497,700	2,265	110,000	66,542	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,715,524	1865	91.9
1866	42,534	3,597,700	992	175,000	83,052	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,899,278	1866	92.3
1867	50,838	3,347,300	791	190,000	119,917	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,708,846	1867	90.2
1868	55,369	3,646,117	367	200,000	88,327	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,990,180	1868	91.2
1869	58,533	4,215,000	144	220,000	202,308	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,695,985	1869	89.9
1870	83,765	5,260,745	86	250,000	204,618	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,799,214	1870	90.7
1871	90,030	5,205,234	273	269,397	165,129	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,730,063	1871	90.8
1872	91,251	6,293,194	331	308,100	184,391	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,877,267	1872	91.5
1873	104,036	9,893,786	467	365,052	474,379	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,837,720	1873	91.3
1874	103,177	10,926,945	604	168,807	583,751	149,837	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,933,121	1874	91.5
1875	108,569	8,787,514	813	220,000	697,364	158,522	4,566	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,977,348	1875	88.1
1876	111,314	9,132,669	2,891	312,000	1,320,528	164,157	7,708	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,051,267	1876	82.6
1877	108,569	13,350,363	2,934	312,000	1,800,720	169,792	9,560	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,753,938	1877	85.4
1878	109,300	15,396,868	4,329	312,000	2,400,960	175,420	17,884	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,416,761	1878	84.7
1879	110,007	19,914,146	2,891	575,000	2,761,104	214,800	23,457	.....	.....	.....	.....	.....	.....	.....	.....	.....	23,601,405	1879	84.3
1880	114,321	26,286,123	2,035	350,000	3,001,200	229,120	25,497	9,310	.....	.....	.....	.....	.....	.....	.....	.....	30,017,606	1880	87.6
1881	121,511	27,661,238	1,237	275,000	3,601,441	286,400	16,751	29,219	.....	.....	.....	.....	.....	.....	.....	.....	31,992,797	1881	86.4
1882	136,610	30,349,897	1,316	275,000	4,537,815	330,076	15,549	58,025	.....	.....	.....	.....	.....	.....	.....	.....	35,704,288	1882	85.0
1883	139,486	23,449,633	1,618	250,000	6,002,401	365,160	20,473	26,708	.....	.....	.....	.....	.....	.....	.....	.....	30,255,479	1883	77.5
1884	210,667	24,218,438	2,855	250,000	10,804,577	408,120	27,923	46,161	.....	.....	.....	.....	.....	.....	.....	.....	35,968,741	1884	67.3
1885	193,411	21,858,785	1,941	250,000	13,924,596	465,400	29,237	41,360	.....	.....	.....	.....	.....	.....	.....	.....	36,764,730	1885	59.4
1886	168,606	28,064,841	1,575	584,061	18,006,407	305,884	37,916	73,864	.....	.....	.....	.....	.....	.....	.....	.....	47,243,154	1886	59.4
1887	181,907	28,283,483	1,496	525,655	18,367,781	343,832	28,645	74,284	.....	.....	.....	.....	.....	.....	.....	.....	47,807,083	1887	59.2
1888	218,576	27,612,025	1,251	695,203	23,048,787	466,537	37,436	84,782	.....	.....	.....	.....	.....	.....	.....	.....	52,164,597	1888	52.9
1889	297,666	35,163,513	1,273	704,690	24,609,407	515,268	52,811	68,217	94,250	.....	.....	.....	.....	.....	.....	.....	61,507,095	1889	57.2
1890	383,227	45,823,572	2,998	795,030	28,691,218	659,012	51,420	108,296	118,065	.....	.....	.....	.....	.....	.....	.....	76,632,838	1890	59.9
1891	488,201	54,292,655	8,305	755,298	34,573,181	630,730	52,917	108,929	190,131	.....	.....	.....	.....	.....	.....	.....	91,100,347	1891	59.6
1892	593,175	50,514,657	18,321	779,753	35,774,504	646,220	68,901	101,404	242,284	.....	.....	.....	.....	.....	.....	.....	88,739,219	1892	56.9
1893	535,655	48,431,066	19,069	798,406	40,456,519	692,669	106,384	99,390	298,969	600,000	.....	.....	.....	.....	.....	.....	92,038,127	1893	52.6
1894	507,255	49,344,516	20,552	829,104	36,375,428	949,146	171,744	122,564	327,218	688,170	.....	.....	.....	.....	.....	.....	89,335,697	1894	55.2
1895	575,200	52,892,276	25,843	726,138	46,140,174	1,452,999	141,310	121,277	371,536	1,215,757	.....	.....	.....	.....	.....	.....	103,662,510	1895	51.0
1896	543,348	60,960,361	18,149	726,822	47,220,633	2,443,080	197,082	145,061	429,979	1,427,132	47,536	.....	.....	.....	.....	.....	114,159,183	1896	53.4
1897	570,886	60,475,516	13,892	709,857	54,399,568	2,226,368	218,559	165,745	545,704	2,551,649	70,831	.....	.....	.....	.....	.....	121,948,575	1897	49.5
1898	776,238	55,364,233	14,489	758,391	61,609,357	2,376,108	265,389	183,427	542,110	2,964,035	70,905	.....	.....	.....	.....	.....	124,924,682	1898	44.4
1899	1,425,777	57,070,850	16,121	808,570	65,954,968	2,313,047	536,079	192,232	940,971	1,795,961	89,166	.....	.....	.....	.....	.....	131,143,742	1899	43.5
1900	1,628,535	63,620,529	12,102	913,498	75,779,417	2,346,505	866,814	358,297	1,078,264	2,253,355	274,800	.....	.....	.....	.....	.....	149,132,116	1900	42.5
1901	1,678,320	69,389,194	16,150	756,679	85,168,556	3,251,544	1,110,790	313,630	1,430,716	4,013,710	274,800	10,345	.....	.....	.....	†20,000	167,434,434	1901	41.4
1902	2,059,935	88,766,916	18,933	530,624	80,540,044	4,142,159	1,193,038	353,674	1,617,363	2,430,465	286,725	40,200	.....	.....	.....	†26,000	182,006,076	1902	48.8
1903	2,763,117	100,461,337	17,876	486,637	75,591,256	5,234,475	1,209,371	445,818	2,510,259	5,770,056	278,092	75,375	.....	.....	.....	†36,000	194,879,669	1903	51.5
1904	3,599,026	117,080,960	25,476	552,575	78,536,655	5,947,383	1,419,473	637,431	3,385,468	6,508,485	345,834	125,625	.....	.....	.....	†40,000	218,204,391	1904	53.7
1905	4,420,987	134,717,580	44,027	634,095	54,960,270	5,765,317	1,472,804	560,963	4,137,098	7,849,896	447,880	251,250	.....	.....	.....	†30,000	215,292,167	1905	62.6
1906	6,378,184	126,493,936	53,577	569,753	58,897,311	5,467,967	1,710,768	578,610	4,015,803	8,180,657	536,294	502,500	.....	.....	.....	†30,000	213,415,360	1906	59.2
1907	8,118,207	166,095,335	59,875	788,872	61,850,734	8,455,841	2,001,838	756,631	4,344,162	9,982,597	756,226	1,005,000	101	.....	.....	†30,000	264,245,419	1907	63.2
1908	8,252,157	178,527,355	50,966	527,987	62,186,447	12,612,295	2,070,145	1,009,278	5,047,038	10,283,357	1,011,180	3,932,900	11,472	169	.....	†30,000	285,552,746	1908	62.5
1909	9,327,278	183,170,874	42,388	420,755	65,970,350	14,932,799	1,889,563	1,018,837	6,676,517	11,041,852	1,316,118	2,713,500	18,431	57,143	.....	†20,000	298,616,405	1909	61.3
1910	9,723,806	209,557,248	50,830	315,895	70,336,574	12,673,688	1,930,661	1,032,522	6,137,990	11,030,620	1,330,105	3,634,080	20,753	142,857	.....	†20,000	327,937,629	1910	64.0
1911	11,107,450	220,449,391	74,709	291,096	66,183,691	10,519,270	1,658,903	1,017,045	6,451,203	12,172,949	1,368,274	12,552,798	13,119	285,307	9,150	†20,000	344,174,355	1911	64.0
1912	12,976,232	222,935,044	53,778	243,336	68,019,208	8,535,174	1,671,405	1,031,050	7,116,672	10,845,624	1,751,143	16,558,215	47,007	436,805	205,905	†20,000	352,446,598	1912	68.9
1913	13,554,768	248,446,230	47,198	228,080	62,834,356	7,818,130	1,942,009	†995,764	7,930,149	11,172,294	2,133,261	25,696,291	130,618	503,616	94,635	†20,000	383,547,399	1913	64.7
1914	12,826,579	265,762,535	39,849	214,805	67,020,522	†5,033,350	2,738,378	†995,764	7,409,792	‡11,834,802	1,917,802	26,235,403	275,500	643,533	777,038	†20,000	403,745,342	1914	65.8
1915	12,029,913	281,104,104	43,898	215,464	68,548,062	4,158,899	3,118,464	†995,764	8,202,674	‡12,386,800	2,487,251	32,910,508	516,120	†750,000	262,208	†10,000	427,740,129	1915	65.7
1916	¶10,298,208	300,767,158	50,585	198,123	¶72,801,110	6,461,706	2,997,178	†995,764	8,491,137	‡13,174,399	2,550,645	40,545,712	796,920	928,581	411,000	†25,000	461,493,226	1916	65.2
1917	†2,681,870	335,315,601	†50,334	205,332	†69,000,000	¶5,965,447	2,898,654	†995,764	8,078,843	‡12,928,955	2,533,417	55,292,770	1,144,737	1,599,455	1,008,750	§7,004,973	506,702,902	1917	66.2
1918	8,730,235	355,927,716	35,953	304,741	40,456,182	5,591,620	2,449,069	711,260	8,000,000	13,284,936	2,536,102	63,828,327	1,321,315	2,082,068	2,079,750	§7,390,080	514,729,354	1918	69.1
1919	6,614,000	377,719,000	35,000	241,000	25,495,000	6,054,000	2,175,000	234,000	8,735,000	15,428,000	2,616,000	87,073,000	1,183,000	1,841,000	1,501,100	750,000	544,885,000	1919	62.0
1920	7,435,344	443,402,000	34,180	196,937	25,429,600	5,606,116	2,139,777	212,046	7,500,000	17,529,210	2,816,649	163,540,000	1,665,989	2,083,027	1,042,000	14,221,125	694,854,000	1920	63.8
Total	165,672,044	5,797,411,719		** 24,855,207	1,923,966,799	165,711,389	42,829,300	17,110,167	122,397,365	221,345,413	29,847,027	624,883,332	7,145,082	11,353,561	7,390,536	36,961,178	9,216,221,450		....

**1,052,422

*Quantity marketed. †Estimated. ‡Includes British Borneo. ¶Estimated in part. §Includes Cuba, 19,167 barrels; Venezuela, 127,743 barrels; Persia 6,856,063.

Figures from United States Geological Survey, Department of Interior.



Tret-O-litE

YOUR OIL

Best process for recovering pipe line oil from Cut Oil, Tank Bottoms and other Crude Oil emulsions. Simple, Efficient and Economical.

PROCESS PATENTED

NOTE:—The Barnickel processes for treatment of Cut Oil, Tank Bottoms and other Petroleum emulsions by the use of chemical agents are protected by valid process patents issued by the United States Patent Office and sustained in the Federal Court. They are also protected by foreign patents.

The chemical compounds manufactured and sold by us under the trade mark Tret-O-litE are most efficient for practicing the Barnickel processes.

The purchaser of Tret-O-litE is licensed to practice the Barnickel patented processes to the extent permitted by the quantity of Tret-O-litE purchased. He is not licensed to use any other chemical covered by the Barnickel patents either alone or with Tret-O-litE.

WM. S. BARNICKEL & CO.
ST. LOUIS, MO.

Service Immediate shipments from stock
Specialties manufactured to your own specifications

Quality Ask our many satisfied customers

Price We only ask for a chance to quote—it speaks for itself.

We manufacture that LONG FORGED STEEL DRILL COLLAR
you have been looking for—any length up to 96 inches—all sizes

Gulfco Products Are Better

GULF COAST MACHINE & SUPPLY COMPANY
BEAUMONT, TEXAS

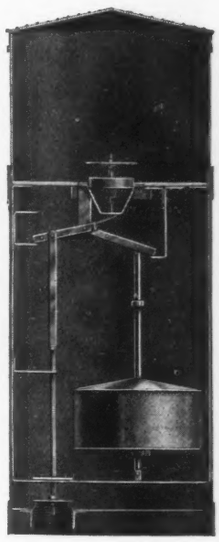
Petroleum Marketed in the United States, 1859-1921, in Barrels of 42 Gallons

Year	Pennsylvania and New York	Ohio	West Virginia	California	Kentucky and Tennessee	Colorado	Indiana	Illinois	Kansas	Texas	Missouri	Oklahoma	Wyoming Includes Montana	Louisiana	United States	Total Value	Year
1859	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,000	$ 32,000	1859
1860	500,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	500,000	4,800,000	1859
1861	2,113,609	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,113,609	1,035,668	1861
1862	3,056,690	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,056,690	3,209,525	1862
1863	2,611,309	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,611,309	8,225,663	1863
1864	2,116,109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,116,109	20,896,576	1864
1865	2,497,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,497,700	16,459,853	1865
1866	3,597,700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,597,700	30,455,398	1866
1867	3,347,300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,347,300	8,066,993	1867
1868	3,646,117	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 646,117	13,217,174	1868
1869	4,215,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,215,000	23,730,450	1869
1870	5,260,745	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,260,745	20,503,754	1870
1871	5,205,234	.....	.....	.....	.....	.....	.....	.....							5,205,234	22,591,180	1871
1872	6,293,194	.....	.....	.....	.....	.....	.....	.....							6,293,194	21,440,503	1872
1873	9,893,786	.....	.....	.....	.....	.....	.....	.....							9,983,786	18,100,464	1873
1874	10,926,945	.....	.....	.....	.....	.....	.....	.....							10,926,945	12,647,527	1874
1875	8,787,514	.....	.....	.....	.....	.....	.....	.....							8,787,514	7,368,133	1875
1876	8,968,906	31,763	120,000	12,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,132,669	22,982,822	1876
1877	13,135,475	29,888	172,000	13,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,350,363	31,788,566	1877
1878	15,163,462	38,179	180,000	15,227	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,396,868	18,044,620	1878
1879	19,685,176	29,112	180,000	19,858	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,914,146	17,210,708	1870
1880	26,027,631	38,940	179,000	40,552	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,286,123	24,600,638	1880
1881	27,376,509	33,867	151,000	99,862	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,661,238	25,448,339	1881
1882	30,053,500	39,761	128,000	128,636	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30,349,897	23,631,165	1882
1883	23,128,389	47,632	126,000	142,857	4,755	.....	.....	.....	.....	.....	.....	.....	.....	.....	23,449,663	25,790,252	1883
1884	23,772,209	90,081	90,000	262,000	4,148	.....	.....	.....	.....	.....	.....	.....	.....	.....	24,218,438	20,595,966	1884
1885	20,776,041	661,580	91,000	325,000	5,164	.....	.....	.....	.....	.....	.....	.....	.....	.....	21,858,785	19,198,243	1885
1886	25,798,000	1,782,970	102,000	377,145	4,726	.....	.....	.....	.....	.....	.....	.....	.....	.....	28,064,841	19,996,313	1886
1887	22,356,193	5,022,632	145,000	678,572	4,791	76,295	.....	.....	.....	.....	.....	.....	.....	.....	28,283,483	18,877,094	1887
1888	16,488,668	10,010,868	119,448	690,333	5,096	297,612	.....	.....	.....	.....	.....	.....	.....	.....	27,612,025	17,947,620	1888
1889	21,487,435	12,471,466	544,113	303,220	5,400	316,476	33,375	1,460	500	48	20	.....	.....	.....	35,163,513	26,963,340	1889
1890	28,458,208	16,124,656	492,578	307,360	6,000	368,842	63,496	900	1,200	54	278	.....	.....	.....	45,823,572	35,365,105	1890
1891	33,009,236	17,740,301	2,406,218	323,600	9,000	655,482	136,634	675	1,400	54	25	30	.....	.....	54,292,655	30,529,553	1891
1892	28,422,377	16,362,921	3,810,086	385,049	6,500	824,000	136,634	521	5,000	45	10	80	.....	.....	50,514,657	25,906,463	1892
1893	20,314,513	16,249,769	8,445,412	470,179	3,000	594,390	2,335,293	400	18,000	50	50	10	.....	.....	48,431,066	28,950,326	1893
1894	19,019,990	16,792,154	8,577,624	705,969	1,500	515,746	3,688,666	300	40,000	60	8	130	2,369	.....	49,344,516	35,522,095	1894
1895	19,144,390	19,545,233	8,120,125	1,208,482	1,500	438,232	4,386,132	200	44,430	50	10	37	3,455	.....	52,892,276	57,632,296	1895
1896	20,584,421	23,941,169	10,019,770	1,252,777	1,680	361,450	4,680,732	250	113,571	1,450	43	170	2,878	.....	60,960,361	58,518,709	1896
1898	15,948,464	18,738,708	13,615,101	2,257,207	5,568	444,383	3,730,907	360	81,098	65,975	19	625	3,650	.....	60,475,516	40,874,072	1897
1897	19,262,066	21,560,515	13,090,045	1,903,411	322	384,934	4,122,356	500	71,980	546,070	10	.....	5,475	.....	55,364,233	44,193,359	1898
1899	14,374,512	21,142,108	13,910,630	2,642,095	18,280	390,278	3,848,182	360	69,700	669,013	132	.....	5,560	.....	57,070,850	64,603,904	1899
1900	14,559,127	22,362,730	16,195,675	4,324,484	62,259	317,385	4,874,392	200	74,714	836,039	[1]1,602	6,472	5,450	.....	63,620,529	75,989,313	1900
1901	13,831,996	21,648,083	14,177,126	8,786,330	137,259	460,520	5,757,086	250	179,151	4,393,658	[2]2,335	10,000	5,400	.....	69,389,194	66,417,335	1901
1902	13,183,610	21,014,231	13,513,345	13,984,268	185,331	396,901	7,480,896	200	331,749	18,083,658	[1]757	37,100	6,253	548,617	88,766,916	71,178,910	1902
1903	12,518,134	20,480,286	12,899,395	24,382,372	554,286	483,925	9,186,411	.....	932,214	17,955,572	[3]3,000	138,911	8,960	917,771	100,461,337	94,694,050	1903
1904	12,239,026	18,876,631	12,644,686	29,649,434	998,284	501,763	11,339,124	.....	4,250,779	22,241,413	[2]2,572	1,366,748	11,542	2,958,958	117,080,960	101,175,455	1904
1905	11,554,777	16,346,660	11,578,110	33,427,473	1,217,337	376,238	10,964,247	181,084	[2]12,013,495	28,136,189	[3]3,100	([3])	8,454	8,910,416	134,717,580	34,157,399	1905
1906	11,500,410	14,787,763	10,120,935	33,098,598	1,213,548	327,582	7,673,477	4,397,050	[2]21,718,648	12,567,897	[3]3,500	([3])	[4]7,000	9,077,528	126,493,936	92,444,735	1906
1907	11,211,606	12,207,448	9,095,296	39,748,375	820,844	331,851	5,128,037	24,281,973	2,409,521	12,322,696	[4]4,000	43,524,128	[5]9,339	5,000,221	166,095,335	120,106,749	1907
1908	10,584,453	10,858,797	9,523,176	44,854,737	[6]727,767	379,653	3,283,629	33,686,238	1,801,781	11,206,464	[3]15,246	45,798,765	[5]17,775	5,788,874	178,527,355	129,079,184	1908
1909	10,434,300	10,632,793	10,745,092	55,471,601	[6]639,016	310,861	2,296,086	30,898,339	1,263,764	9,534,467	[3]5,750	47,859,218	[5]20,056	3,059,531	183,170,874	128,328,487	1909
1910	9,848,500	9,916,370	11,753,071	73,010,560	[6]468,774	239,794	2,159,725	33,143,362	1,128,668	8,899,266	[3]3,615	52,028,718	[5]115,430	6,841,395	209,557,248	127,899,688	1910
1911	9,200,673	8,817,112	9,795,464	81,134,391	[6]472,458	226,926	1,695,289	31,317,038	1,278,819	9,526,474	[3]7,995	56,069,637	[5]186,695	10,720,420	220,449,391	134,044,752	1911
1912	8,712,076	[8]8,969,007	12,128,962	[7]87,272,593	[6]848,368	206,052	970,009	28,601,308	1,592,796	11,735,057	([8])	51,427,071	1,572,306	9,263,439	222,935,044	164,213,247	1912
1913	8,865,493	8,781,468	11,567,299	97,788,525	[6]524,568	188,568	956,095	23,893,899	2,375,029	15,009,478	[9]10,843	63,579,384	2,406,522	12,498,828	248,446,230	237,121,388	1913
1914	9,109,309	8,536,352	9,680,033	99,775,327	[6]502,441	222,773	1,335,456	21,919,749	3,103,585	20,068,184	[10]7,792	73,631,724	3,560,375	14,309,435	265,762,535	214,125,215	1914
1915	8,726,483	7,825,326	9,264,798	86,591,535	[6]437,274	208,475	875,758	19,041,695	2,823,487	24,942,701	[10]14,265	97,915,243	4,245,525	18,191,539	281,104,104	179,462,890	1915
1916	8,466,481	7,744,511	8,731,184	90,951,936	1,203,246	197,235	769,036	17,714,235	8,738,077	27,644,605	.....	107,071,715	6,234,137	15,248,138	300,767,158	330,899,868	1916
1917	8,612,885	7,750,540	8,379,285	93,877,549	3,100,356	121,231	759,432	15,776,860	36,536,125	32,413,287	.....	107,507,471	8,978,680	11,392,201	*335,315,601	522,635,213	1917
1918	8,216,655	7,285,005	7,866,628	97,531,997	4,376,342	143,286	877,558	13,365,974	45,451,017	38,750,031	.....	103,347,070	12,596,287	16,042,600	*355,927,716	703,943,961	1918
1919	9,441,936	8,243,592	9,032,688	101,221,784	5,027,904	241,680	929,780	12,436,000	34,769,100	85,312,000	.....	81,127,900	13,342,320	16,250,000	377,719,000	867,753,379	1919
1920	8,360,400	7,412,000	8,173,050	105,668,000	8,692,600	110,000	932,000	10,772,000	38,500,000	96,000,000	.....	105,725,000	17,407,000	35,649,000	443,402,000	1,360,000,000	1920
1921	8,410,000	7,314,000	7,945,000	114,267,000	9,092,300	108,200	1,165,000	10,085,000	34,312,586	111,969,575	.....	111,256,160	20,473,800	27,814,380	474,858,2 16	.....	192 1
Total	814,415,053	486,336,978	319,625,398	1,431,383,360	41,015,992	11,779,250	109, 132,364	33 1,5 18,380	256,303,984	620,831,580	86,977	1,149,429,517	91,242,693	230,483,291	5,904,550,935	6,756,620,547	

Arkansas 1921 10,645,415

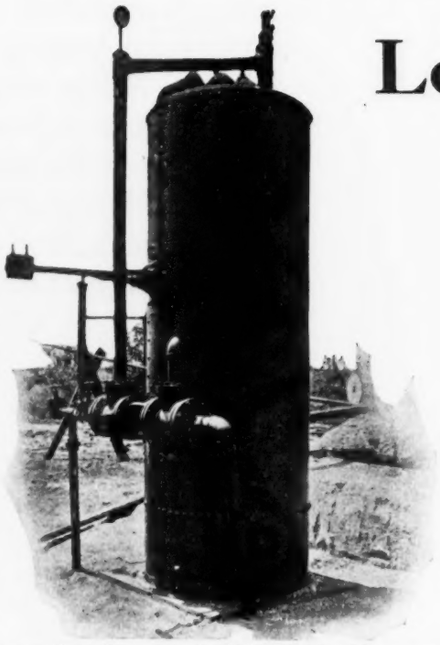
*Includes Alaska, Michigan and Missouri production, estimated at 10,300 barrels in 1917 and 7,943 barrels in 1918. [1]Includes production of Michigan. [2]Includes production of Oklahoma. [3]Included with Kansas. [4]Estimated. [5]Includes production of Utah. [6]No. production in Tennessee recorded. [7]Includes small production in Alaska. [8]No production in Missouri; Michigan included in Ohio. [9]Includes production of Alaska, Michigan and New Mexico. [10]Includes production of Alaska and Michigan. Figures from United States Geological Survey, Department of Interior.

Scientific Conservation



(Patented)

Lorraine Automatic Gas and Oil Separators



Lorraine Automatic Oil and Gas Separator

The Gendar Oil Meter— The Automatic Oil Gauge and Sampler will increase your lease efficiency through a detailed account of barrels of production of individual wells.

The Super Gas Traps

The Lorraine Gas and Oil Separators are designed on absolutely new principles. They accomplish the separation of oil, gas and sand by methods never before employed. They actually regulate and control the flowing well, thereby increasing production. Built to handle wells of any capacity. Ask any large California operator, or for detailed information write or cable

Buck & Stoddard

Distributors

90 West Street
New York

485 California Street
San Francisco

456 South Spring Street
Los Angeles

Cable Address "Buckstod"

AMERICAN REFINING COMPANY
WICHITA FALLS

October 5, 1920.

Tulsa Boiler & Sheet Iron Works,
Tulsa, Oklahoma.

Gentlemen:

It is a pleasure to state that the material and workmanship covering the tankage at our plant is of the very best. The five crude stills furnished by you, have given us no trouble whatever, as well as the agitator which we run for a long time without lining with lead has never caused us to shut down one time. I consider that this material is the best that I have had erected in any of the plants that I have built.

Hoping that you will continue this good workmanship, I remain,

Yours very truly,

AMERICAN REFINING COMPANY

By O. B. Manross

Sup't-Refy.

OBM-fh.1

Tulsa Boiler & S

Box
Tulsa,

Operating the largest and
steel tank shop located
River, established in the
seventeen years, speci
Crude Stills, Agitato
Storage and **Pressure**
required for the refi
and **Low Pressu**
Tanks, Stock or
etc., as required
Gasoline

GENERAL OFFICE DENVER COLORADO DIVISION OFFICES TULSA OKLAHOMA CASPER AND LANDER WYOMING
REFINERY BLACKWELL OKLAHOMA

PRODUCERS & REFINERS CORPORATION

PETROLEUM AND ITS PRODUCTS
FIRST NATIONAL BANK BUILDING
TULSA, OKLAHOMA

WILLIAM L. MISTLER
VICE PRES. & GEN'L MGR. CONTRACT & PROD.

March 29th, 1920.

Tulsa Boiler & Sheet Iron Works,
Tulsa, Okla.,

Gentlemen:-

The six 30 ft diameter by 10 ft high run down tanks built by you on our order number 5379, have been tested, inspected, and found tight, and so far as we are able to determine, are now completed in a workman like manner.

Yours very truly,

PRODCUERS & REFINERS CORPORATION.

By- J. A. Santoni
Asst. Superintendent.

CHAS. F. NOBLE OIL & GAS CO.

Burkburnett, Texas. Sept. 17th, 1920.

Mr Ed Morrisey,
% Tulsa Boiler & Sheet Iron Works,
Tulsa, Okla.

Dear Sir:
This is an acceptance of the Agitator built by you for us and can say that it is built in first class shape and we are perfectly satisfied with it in every respect.

Chas. F. Noble Oil & Gas Co.
Signed Geo M. Hoglett

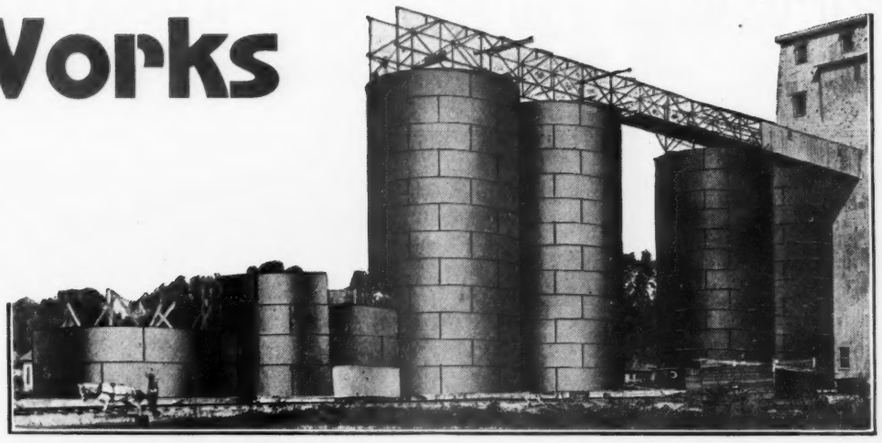
A satisfied customer makes it unnecessary for us to dwell upon our own merits as manufacturers of first class refinery tankage. *May we not serve you also?*

Tulsa Boiler & Sheet Iron Works

Box 1926, Tulsa, Oklahoma

Sheet Iron Works

1926
Okla.



most modernly equipped
west of the Mississippi
Mid-Continent field
alizing exclusively on
rs, **Condenser Boxes,**
Tanks, etc., as re-
nery trade; also **High**
re **Accumulator**
Blending Tanks,
for Casinghead
Plants

Why lose time and money awaiting delivery of your refinery tankage from far distant points—railroads are uncertain—when from our shops and stocks of materials, located right at your door, you can secure at once pressure and storage tanks?

Tulsa Boiler & Sheet Iron Works

Box 1926, Tulsa, Oklahoma

Production of Texas by Fields
From 1895 to January 1, 1922

Year	Corsicana	Powell	Petrolia	Marion County	Wichita and Wilbarger Counties	Moran	Strawn	Coleman County	Eastland County	Stephens County	Desdemona	Brown County	Thrall	Miscellaneous
1895	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1896	1,450	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	65,975	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1898	544,620	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1899	668,483	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1900	829,560	5.479	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1901	763,424	37,121	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1902	571,079	46,812	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1903	401,817	100,143	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1904	374,318	129,329	65,455	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1905	312,595	131,051	101,651	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1906	336,387	675,842	111,072	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1907	276,311	596,897	83,260	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1908	211,117	398,649	82,639	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,525
1909	180,764	383,137	113,485	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,554
1910	137,331	450,188	126,531	251,717	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,656
1911	128,526	373,055	168,965	677,689	899,579	.....	.....	.....	.....	.....	.....	.....	.....	3,379
1912	233,282	251,240	197,421	362,870	4,227,104	.....	.....	.....	.....	.....	.....	.....	.....	4,062
1913	158,830	283,476	344,868	262,392	8,131,624	.....	.....	.....	.....	.....	.....	.....	.....	7,074
1914	133,811	282,279	550,585	180,584	8,227,951	68,191	.....	.....	.....	.....	.....	.....	.....	12,900
1915	143,275	237,410	349,857	123,464	5,833,386	109,116	50,498	.....	.....	.....	.....	.....	613,182	4,061
1916	135,263	215,729	302,145	64,971	7,837,386	135,608	175,147	.....	.....	.....	.....	.....	432,695	32,140
1917	131,828	196,855	282,420	57,952	9,541,636	68,118	340,950	.....	93,053	36,219	.....	6,040	176,887	111,220
1918	*361,980	.....	297,320	.....	12,159,032	54,900	185,520	31,253	3,107,120	790,243	.....	451,002	12,000	e130,000
1919	*150,000	.....	212,624	**	30,279,108	32,500	101,300	46,590	22,379,665	10,514,216	7,375,825	213,256	8,200	235,075
1920	530,000	.....	135,385	.....	32,895,485	48,575	512,260	83,785	10,141,385	23,852,050	5,097,745	114,665	8,000	e25,000
1921	305,335	.....	132,295	.....	24,184,955	50,455	262,055	66,190	5,887,420	31,037,710	2,467,115	122,475	73,280	e24,000
T't'ls	8,087,361	4,794,692	3,657,978	1,981,639	144,217,246	567,463	1,627,730	227,819	41,608,643	66,230,438	14,940,685	907,438	1,324,244	601,646

	1920	1921	Total
Mexia	.....	4,716,805	4,716,805
Young Co.	134,895	2,820,080	2,954,975
Holliday-Archer Co...	49,850	422,205	472,055

*—Includes Powell. **—Figures not obtainable. e—Estimated.

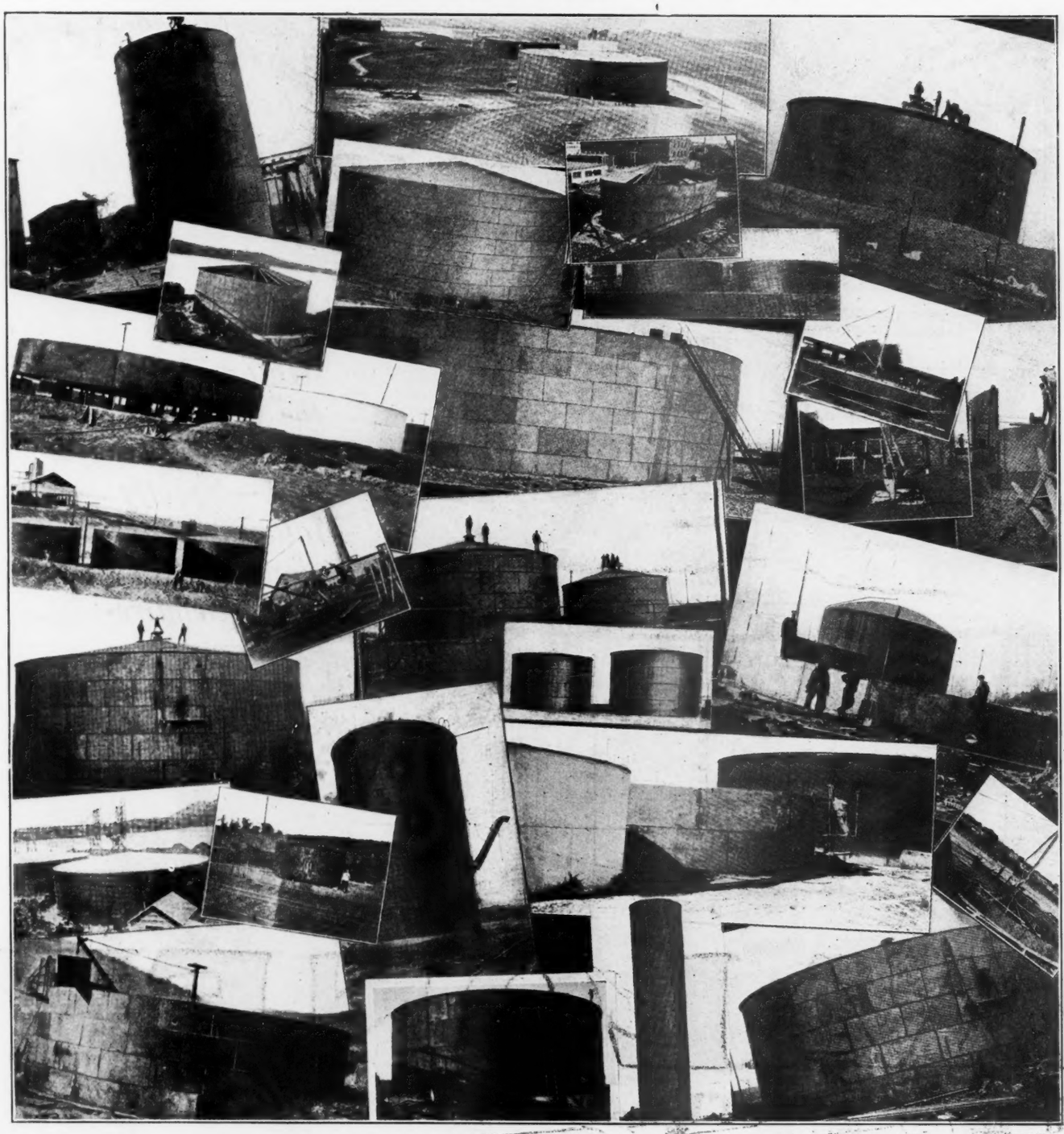
Year	Spindle Top	Sour Lake	Batson	Saratoga	Humble	Goose Creek	Orange County	Matagorda County	Damon Mound	Hull	Barbers Hill	West Columbia	Dayton	Blue Ridge and Other Pools	San Antonio District and Somerset
1901	3,593,113	.....	.....	.....	.....	.....	.....	.....	.....	....					
1902	17,420,949	44,338	.....	.....	.....	.....	.....	.....	.....	....					
1903	8,600,905	8,848,159	4,518	.....	.....	.....	.....	.....	.....	....					
1904	3,433,842	6,442,357	10,904,737	739,239	.....	.....	.....	151,936	.....	....					
1905	1,600,379	3,369,012	3,790,629	2,922,215	18,066,428	.....	.....	46,470	.....	.....	.....	.....	60,294	.....	.....
1906	1,075,755	2,156,010	2,388,238	2,289,057	3,570,845	.....	.....	8,000	.....	.....	.....	.....	192,460	.....	.....
1907	1,613,513	2,354,997	2,166,554	2,198,585	2,930,842	.....	.....	4,500	.....	.....	.....	.....	120,036	.....	.....
1908	1,747,537	1,595,060	1,593,570	1,634,786	3,778,521	.....	.....	62,640	.....	.....	.....	.....	39,901	31,185	.....
1909	1,388,170	1,703,798	1,206,214	1,183,559	3,237,060	.....	.....	29,103	.....	.....	.....	.....	17,647	87,039	.....
1910	1,182,436	1,518,723	1,113,767	1,024,348	2,495,511	.....	.....	455,999	.....	.....	.....	.....	9,582	129,497	.....
1911	965,939	1,364,880	1,023,493	925,777	2,426,220	.....	.....	561,828	.....	.....	.....	.....	4,344	2,800	.....
1912	822,916	1,175,108	844,563	1,116,655	1,829,923	43,808	.....	300,000e	.....	.....	.....	.....	12,151	1,044	.....
1913	716,374	1,348,053	741,350	937,720	1,504,880	249,641	17,706	294,553	.....	.....	.....	.....	13,329	1,620	.....
1914	580,130	5,209,208	775,804	889,743	2,799,458	134,748	43,208	164,192	.....	.....	.....	.....	18,791	1,780	.....
1915	388,266	4,114,622	703,686	864,266	11,061,802	119,336	21,697	137,481	.....	.....	.....	.....	10,378	47,254	.....
1916	340,441	4,923,332	744,915	781,128	10,925,805	397,291	17,758	158,336	.....	.....	.....	.....	8,571	43,921	.....
1917	308,039	4,763,004	692,417	682,797	7,389,831	7,300,279	7,023	128,011	.....	.....	.....	.....	9,995	159,245	.....
1918	502,265	3,115,033	654,950	790,740	5,645,104	9,419,132	3,425	99,540	486,640	330,300	20,000	136,350	7,442	40,000	58,400
1919	458,680	2,740,142	502,200	616,110	3,270,617	7,288,716	4,400e	53,260	434,700	1,476,405	169,415	8,128,809	1,000	24,910	94,100
1920	323,995	2,073,485	484,035	913,735	3,692,115	5,666,390	4,000	75,775	1,259,375	4,468,615	136,375	10,563,150	1,000	*173,085	245,135
1921	321,080	1,749,625	516,225	936,695	3,098,500	5,647,020	704,870	89,405	1,353,960	8,717,970	49,885	12,573,450	30,410	*461,035	482,340
Total	47,384,644	60,608,946	30,851,865	22,447,155	87,723,462	36,266,261	824,087	2,821,029	3,534,675	14,993,290	375,675	31,401,759	557,331	1,204,415	879,975

	1920	1921	Total
Nacogdoches	75,000	103,035	178,035
Pierce Junction	.....	1,403,940	1,403,940

*Blue Ridge only. e—Estimated.

The above table was compiled from the files of various oil companies, from the files of The OIL WEEKLY, the Oil Investors Journal, and from a year book issued by the Bureau of Mines, U. S. G. S.

Lancaster



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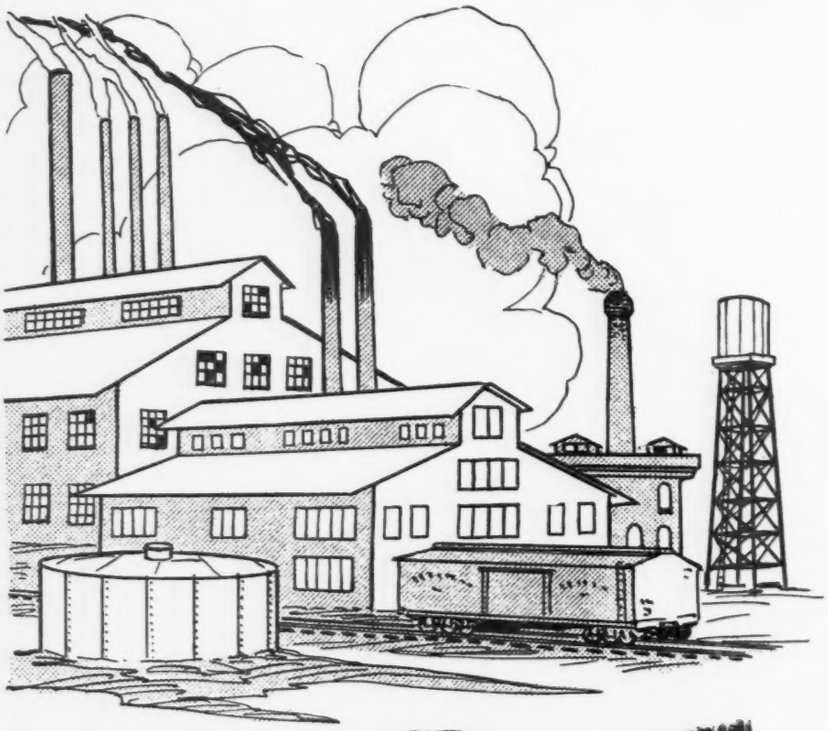

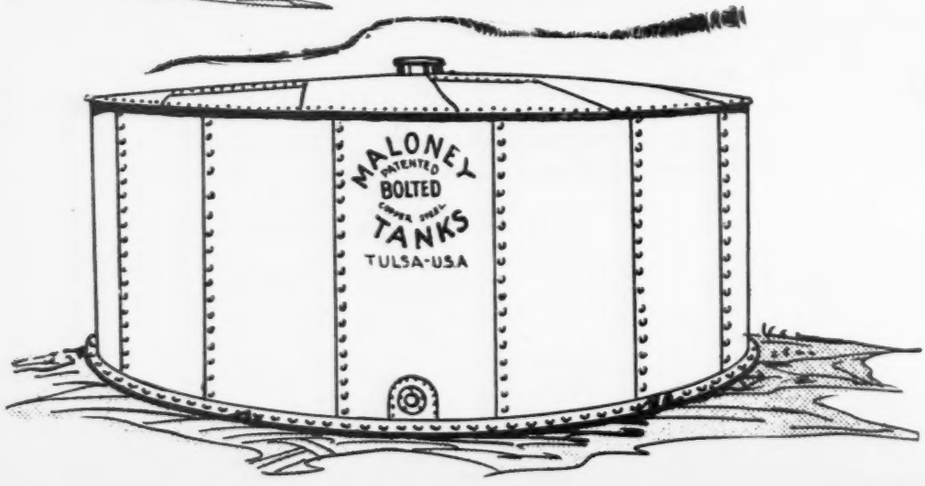

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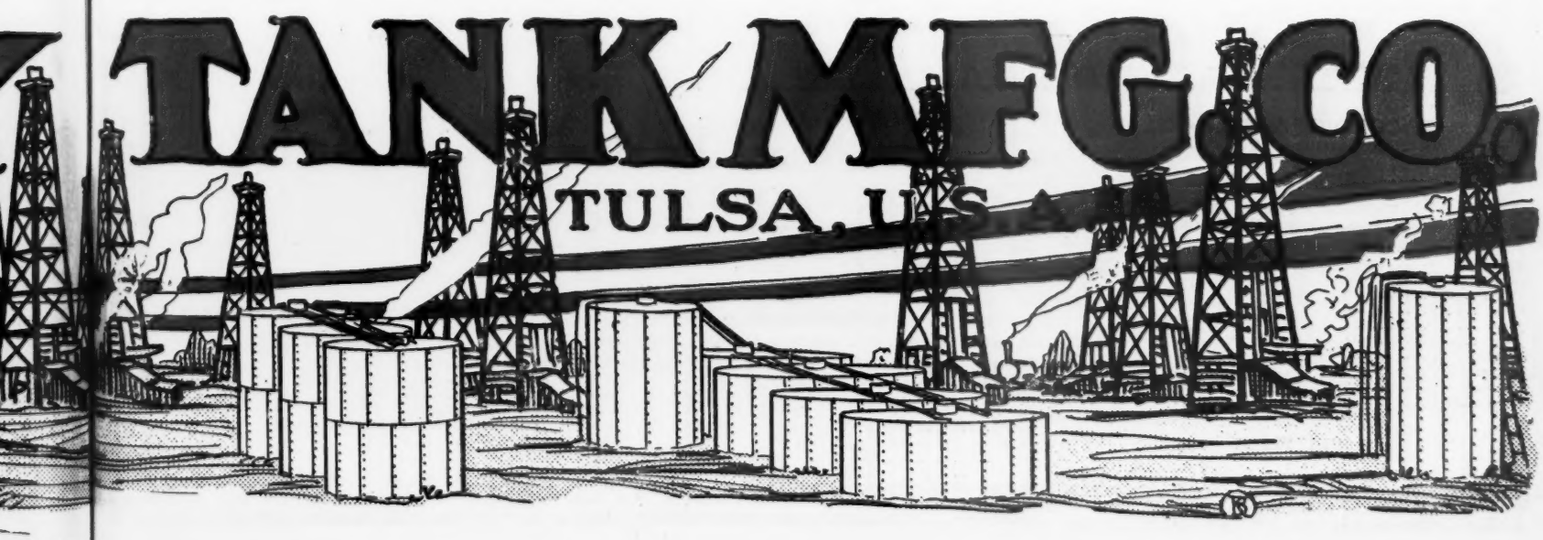

Total Production of Crude Oil in California

From the Beginning of the Industry to December 31, 1920, by Fields—in Barrels (42 U. S. Gallons)

Note.—The production figures in the tabulation below give the crude oil production of each field for each year since the beginning of the industry in the State. It is a history in figures of California's crude oil production and field development

Year	Kern River	McKittrick	Midway	Sunset	Coalinga	Santa Maria-Lompoc	Summerland	Newhall and Ventura Co.	Los Angeles and Salt Lake	Whittier-Fullerton	Lost Hills-Belridge	Miscellaneous	Total
Prior	.....	.....	.....	.....	.....	.....	.....	175,000	.....	.....	.....	.....	175,000
1876	.....	.....	.....	.....	.....	.....	.....	12,000	.....	.....	.....	.....	12,000
77	.....	.....	.....	.....	.....	.....	.....	13,000	.....	.....	.....	.....	13,000
78	.....	.....	.....	.....	.....	.....	.....	15,227	.....	.....	.....	.....	15,227
79	.....	.....	.....	.....	.....	.....	.....	19,858	.....	.....	.....	.....	19,858
1880	.....	.....	.....	.....	.....	.....	.....	40,552	.....	.....	.....	.....	40,552
81	.....	.....	.....	.....	.....	.....	.....	99,862	.....	.....	.....	.....	99,862
82	.....	.....	.....	.....	.....	.....	.....	128,636	.....	.....	.....	.....	128,636
83	.....	.....	.....	.....	.....	.....	.....	142,857	.....	.....	.....	.....	142,857
84	.....	.....	.....	.....	.....	.....	.....	262,000	.....	.....	.....	.....	262,000
85	.....	.....	.....	.....	.....	.....	.....	325,000	.....	.....	.....	.....	325,000
86	.....	.....	.....	.....	.....	.....	.....	377,145	.....	.....	.....	.....	377,145
87	.....	.....	.....	.....	.....	.....	.....	678,572	.....	.....	.....	.....	678,572
88	.....	.....	.....	.....	.....	.....	.....	690,333	.....	.....	.....	.....	690,333
89	.....	.....	.....	.....	.....	.....	.....	303,220	.....	.....	.....	.....	303,220
1890	.....	.....	.....	.....	*	.....	*	307,360	.....	.....	.....	.....	307,360
91	.....	.....	.....	*	.....	.....	.....	323,600	.....	.....	.....	.....	323,600
92	.....	*	.....	.....	.....	.....	.....	385,049	.....	.....	.....	.....	385,049
93	.....	.....	.....	.....	.....	.....	.....	470,179	.....	.....	.....	.....	470,179
94	.....	.....	.....	.....	.....	.....	1,590	524,469	257,109	.....	.....	.....	783,078
95	.....	.....	.....	.....	.....	.....	16,904	476,490	751,945	.....	.....	.....	1,245,339
96	.....	.....	.....	.....	14,119	.....	39,792	298,866	905,003	.....	.....	.....	1,257,780
97	.....	.....	.....	.....	70,140	.....	130,136	368,282	1,327,011	12,000	.....	4,000	1,911,569
98	.....	10,000	.....	.....	154,000	.....	132,217	427,000	1,462,871	60,000	.....	3,000	2,249,088
99	*	15,090	.....	.....	439,372	.....	208,370	496,200	1,409,356	108,077	.....	1,500	2,677,875
1900	826,775	80,000	*	12,500	547,960	.....	183,486	443,000	1,722,887	254,397	.....	248,945	4,319,950
01	3,278,840	430,450	4,235	188,600	525,433	*	203,616	472,057	2,304,432	302,652	.....	.....	7,710,315
02	8,988,046	619,296	3,048	167,558	571,233	86,888	143,552	475,000	2,198,496	1,103,793	.....	.....	14,356,910
03	16,342,099	1,353,206	27,305	352,565	2,138,058	204,890	131,125	682,185	793,765	2,305,613	.....	3,670	24,334,481
04	17,226,240	1,856,225	910	390,425	5,097,853	700,450	120,506	650,779	1,241,304	2,224,550	.....	39,392	29,548,634
05	15,253,845	1,373,030	18,530	419,212	8,882,125	3,402,800	96,871	476,898	2,226,768	2,118,312	.....	29,650	34,298,041
06	12,825,166	680,756	11,800	307,550	8,401,105	4,799,411	72,810	404,379	2,675,650	2,434,512	.....	10,090	32,623,229
07	12,346,014	2,415,840	149,944	704,805	8,996,268	8,249,236	69,060	435,584	3,372,465	3,294,206	.....	69,090	40,102,512
08	13,803,579	3,076,300	434,578	1,463,510	10,725,795	8,699,350	67,862	498,015	5,138,959	4,273,314	.....	125,475	48,306,737
09	14,508,242	5,807,360	2,234,455	1,999,701	15,406,619	8,017,455	66,338	516,628	4,350,898	5,157,252	.....	126,775	58,191,723
1910	14,776,435	5,471,613	11,174,207	9,218,904	18,646,570	7,607,830	74,725	652,575	3,729,618	6,281,221	4,900	58,970	77,697,568
11	14,078,890	5,477,532	21,584,602	5,559,069	18,311,251	7,465,074	71,255	661,785	3,223,661	7,081,165	168,410	61,350	83,744,044
12	12,446,445	5,094,465	25,948,980	5,590,824	19,546,122	6,801,966	65,715	859,885	3,073,427	7,919,779	2,680,961	45,870	90,074,439
13	9,980,940	4,496,842	33,040,129	5,984,651	18,604,626	5,817,711	62,406	1,022,052	2,898,846	10,657,053	5,274,553	27,375	97,867,184
14	7,030,545	3,820,857	37,479,228	12,546,615	15,925,887	4,303,080	55,743	968,421	2,504,475	14,130,548	4,830,921	27,375	103,623,695
15	8,034,974	3,552,801	33,311,486	6,006,607	13,548,159	4,536,840	53,000	1,036,305	2,110,133	13,030,549	4,318,550	27,375	89,566,779
16	8,402,525	3,230,644	32,156,818	6,768,658	14,381,493	4,422,410	56,775	1,122,033	1,721,453	14,679,672	4,852,431	27,450	91,822,362
17	8,495,610	3,252,544	29,487,812	7,072,333	15,938,543	5,789,070	56,570	1,186,407	1,501,799	18,155,440	6,295,329	27,375	97,267,832
18	7,921,515	3,050,627	27,439,993	6,608,940	16,283,066	7,143,750	54,613	1,386,518	1,397,781	24,903,613	5,420,079	27,375	101,637,870
19	7,563,025	2,810,848	26,414,067	5,589,885	16,385,610	6,030,916	53,680	1,792,463	1,341,415	28,657,683	4,554,821	27,375	101,221,784
20	7,457,810	2,600,763	†37,932,405	.....	15,697,035	5,808,036	54,000	2,049,815	1,320,573	28,501,594	4,158,559	38,116	105,618,706
	221,587,561	605,576,999	308,854,532	76,952,912	245,238,442	99,896,157	2,342,627	25,153,543	56,962,100	197,646,995	42,559,514	1,057,593	1,348,828,974

CALIFORNIA PRODUCTION BY FIELDS FOR 1921

California Proved Oil Lands and Producing Wells

	1919		1920		1921	
	Land, acres	Producing wells	Land, acres	Producing wells	Land, acres	Producing wells
Fresno	13,319	1,168	13,924	1,274	14,232	1,409
Kern	57,499	4,926	58,371	5,324	59,757	5,720
Los Angeles	2,873	783	2,931	833	2,959	897
Orange	3,530	504	3,879	542	4,666	617
Ventura	1,776	374	2,172	481	2,878	468
Santa Barbara	9,363	412	9,663	448	9,223	503
San Luis Obispo	772	13	772	17	772	20
Santa Clara	80	8	80	9	80	8
	89,212	8,188	91,792	8,928	94,567	9,642
Proved acres per well		10.9		10.3		9.9

RECORD OF WELLS, 1921

December Statistics Not Available

KERN RIVER

	No. Wells Drilling	No. Comp. During Mo.	No. Aband. During Mo.	No. Producing
January	42	12	..	2,166
February	43	9	1	2,178
March	38	12	..	2,183
April	34	7	..	2,196
May	32	8	..	2,203
June	31	13	1	2,210
July	31	5	..	2,211
August	33	1	..	2,216
September	34	3	..	2,216
October	28	3	..	878
November	26	1	..	2,145

M'KITTRICK

January	7	..	..	352
February	11	..	..	352
March	10	..	..	352
April	12	..	1	350
May	14	..	2	349
June	12	..	..	349
July	13	1	..	346
August	8	2	1	346
September	5	..	..	336
October	4	..	..	92
November	3	..	..	324

MIDWAY-SUNSET

January	92	25	3	2,541
February	93	22	4	2,559
March	99	26	3	2,566
April	119	18	1	2,606
May	125	24	1	2,621
June	123	28	1	2,645
July	125	29	..	2,671
August	88	41	1	2,686
September	85	10	3	2,526
October	33	4	..	993
November	67	11	..	2,587

LOST HILLS-BELRIDGE

	No. Wells Drilling	No. Comp. During Mo.	No. Aband. During Mo.	No. Producing
January	16	1	..	593
February	12	3	..	594
March	12	1	..	597
April	20	..	..	598
May	20	..	..	609
June	17	6	1	611
July	17	2	..	607
August	9	2	..	626
September	9	..	..	596
October	9	..	..	95
November	12	..	..	566

COALINGA

January	31	7	2	1,291
February	36	5	1	1,303
March	36	6	2	1,310
April	36	8	2	1,316
May	34	7	..	1,318
June	36	3	..	1,336
July	25	7	4	1,229
August	20	5	1	1,228
September	9	1	..	1,235
October	1	..	..	486
November	10	3	..	1,038

LOMPOC AND SANTA MARIA

January	20	1	..	404
February	18	2	..	406
March	22	2	1	398
April	21	1	1	405
May	20	1	..	410
June	20	2	..	410
July	18	1	..	413
August	16	2	..	413
September	13	4	..	411
October	10	3	..	414
November	10	1	..	411

(Continued on page 82.)

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STATISTICAL HISTORY OF YEAR 1921 IN CALIFORNIA

Daily average production of each field, month by month. Total monthly production by fields; total production for the year; index to stock accumulations

(Compiled from monthly production reports by Standard Oil Company (California), except for December

	January (Bbls.)	February (Bbls.)	March (Bbls.)	April (Bbls.)	May (Bbls.)	June (Bbls.)	July (Bbls.)	August (Bbls.)	September (Bbls.)	October (Bbls.)	November (Bbls.)	*Dec. (Bbls.)	Total production for year 1921 by field (Bbls.)
Kern River—													
Daily average ..	20,235	21,200	21,415	21,900	21,155	20,845	20,695	20,695	11,800	6,740	15,005	17,480	
Total monthly ..	627,285	593,600	663,865	670,000	655,805	625,350	641,548	641,545	354,000	208,940	450,150	541,880	6,773,968
McKittrick—													
Daily average ..	6,964	6,774	6,855	6,631	6,730	6,557	6,693	6,889	2,943	770	4,224	4,985	
Total monthly ..	215,884	189,672	211,505	198,930	208,630	196,710	207,783	204,259	88,290	23,870	126,720	154,535	2,026,788
Midway-Sunset—													
Daily average ..	143,806	141,613	145,797	144,764	138,773	139,886	138,040	133,619	98,019	76,825	112,903	124,195	
Total monthly ..	4,457,986	3,955,164	4,519,707	4,342,920	4,301,963	4,196,580	4,279,640	4,144,049	2,940,570	2,381,575	3,387,090	3,850,045	46,757,289
Lost Hills-Belridge—													
Daily average ..	11,264	10,771	11,153	10,997	10,744	10,569	10,289	10,130	4,317	1,115	5,883	9,190	
Total monthly ..	349,184	301,588	345,743	329,710	333,064	317,070	318,957	314,030	129,510	34,565	176,490	283,960	3,193,871
Coalinga—													
Daily average ..	40,911	40,577	40,512	39,887	39,593	40,031	33,832	32,298	21,299	15,737	26,715	29,770	
Total monthly ..	1,268,241	1,136,156	1,255,872	1,196,610	1,227,384	1,200,930	1,048,792	1,001,238	638,970	487,847	801,450	922,870	12,177,360
Lompoc-Santa Maria—													
Daily average ..	16,150	16,140	15,918	14,950	14,663	15,612	16,021	14,599	15,339	14,928	14,374	14,295	
Total monthly ..	500,650	451,920	493,458	448,500	454,553	468,360	496,651	452,869	460,170	462,768	431,220	443,145	5,563,965
Ventura-Newhall—													
Daily average ..	6,001	6,194	6,118	6,329	6,249	5,959	6,987	7,011	6,995	6,826	6,628	6,690	
Total monthly ..	186,031	173,432	187,658	189,870	193,719	178,770	216,597	217,341	209,850	211,606	198,840	207,390	2,373,104
Los Angeles-Salt Lake—													
Daily average ..	3,503	3,667	3,555	3,765	4,065	3,617	3,800	3,769	3,891	3,566	3,496	3,512	
Total monthly ..	108,592	102,676	110,205	129,950	126,015	108,510	117,800	116,839	116,730	110,546	104,880	108,872	1,361,615
Whittier-Fullerton—													
Daily average ..	82,135	80,715	86,149	85,106	89,520	88,960	88,677	87,239	89,647	88,617	90,079	89,890	
Total monthly ..	2,546,185	2,260,020	2,670,619	2,553,180	2,775,120	2,668,980	2,748,987	2,704,409	2,689,410	2,747,127	2,702,270	2,786,590	31,442,987
†Huntington Beach—													
Daily average ..	.....	.....	.....	4,439	5,396	5,370	6,005	7,384	9,151	12,581	13,803	15,900	
Total monthly ..	.....	.....	.....	133,170	167,276	161,100	186,155	228,904	274,530	400,011	414,090	492,900	2,458,036
Summerland—													
Daily average ..	152	148	148	148	148	148	148	148	148	148	148	148	
Total monthly ..	4,712	4,144	4,588	4,440	4,588	4,440	4,588	4,588	4,440	4,588	4,440	4,588	54,144
Miscellaneous—													
Daily average ..	65	65	65	65	65	65	65	65	65	65	65	65	
Total monthly ..	2,015	1,820	2,015	1,950	2,015	1,950	2,015	2,015	1,950	2,015	1,950	2,015	23,725
Total production in California in 1921													114,206,762

INDEX TO STOCKS ACCUMULATION

	Barrels
Crude oil in storage in California, January 1, 1920	27,804,391
Crude oil in storage in California, January 1, 1921	19,618,847
Crude oil in storage in California, December 1, 1921	33,116,456

*December figures estimated. †January, February and March shown with Whittier-Fullerton.

CALIFORNIA SUMMARY *for* 1921

(Continued from page 80.)

VENTURA-NEWHALL

	No. Wells Drilling	No. Comp. During Mo.	No. Aband. During Mo.	No. Producing
January	47	5	..	516
February	47	3	..	519
March	45	1	..	529
April	57	10	..	526
May	56	4	..	537
June	49	2	..	539
July	50	8	..	533
August	46	3	..	543
September	43	4	..	520
October	42	3	..	538
November	39	..	..	542

LOS ANGELES AND SALT LAKE

January	10	1	..	666
February	8	2	..	666
March	6	1	..	666
April	9	1	..	666
May	7	1	..	667
June	1	..	..	669
July	8	..	..	669
August	9	1	..	669
September	8	..	..	670
October	9	..	1	671
November	10	..	..	670

WHITTIER-FULLERTON

January	196	12	..	995
February	202	14	1	997
March	220	17	..	1,012
April	169	10	..	1,020
May	174	12	3	1,027
June	160	15	..	1,040
July	150	15	..	1,051
August	126	14	..	1,077
September	110	17	2	1,090
October	107	8	..	1,111
November	109	11	1	1,108

HUNTINGTON BEACH

(Report carried with Whittier-Fullerton till April, 1921.)

	No. Wells Drilling	No. Comp. During Mo.	No. Aband. During Mo.	No. Producing
April	58	3	..	6
May	71	2	..	8
June	86	7	..	8
July	86	8	..	12
August	93	12	..	22
September	104	8	..	33
October	119	11	..	40
November	133	11	..	47

SUMMERLAND

No wells drilled during the year. None abandoned. Has 137 producers.

WATSONVILLE AND MISCELLANEOUS

January	42	..	..	9
February	55	..	..	9
March	52	..	..	9
April	60	..	..	9
May	58	..	..	9
June	44	..	..	9
July	50	..	..	9
August	60	..	..	9
September	60	..	..	9
October	53	..	..	9
November	60	..	..	9

*From statistics of Standard Oil Company of California.

NOTE.—December statistics not available.

ARKANSAS *for* 1921

EL DORADO

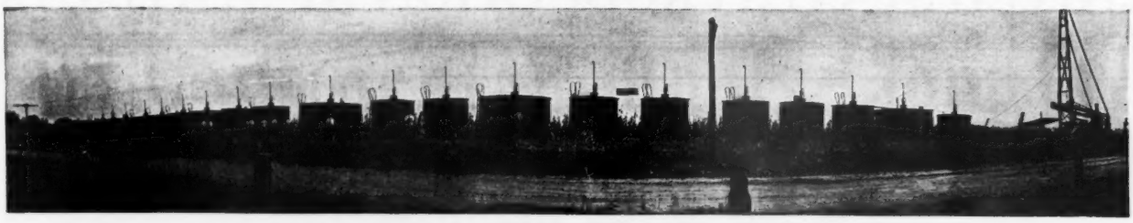
	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	3	3	..	7,025	
February	5	5	..	4,725	
March	19	19	..	48,875	25,000
April	16	15	1	34,125	150,000
May	36	35	1	38,435	579,700
June	70	68	2	68,850	720,000
July	89	87	2	80,075	1,352,000
August	87	85	2	95,125	2,238,945
September	63	63	..	50,655	1,819,500
October	101	91	10	74,475	1,354,700
November	70	68	2	29,655	1,018,010
December	86	71	5	36,865	1,387,560
Totals 1921	645	620	25	568,885	10,645,415
Arkansas Cats	14	..	14	.....	.....
Total Arkansas	659	620	39	568,885	10,645,415

CALIFORNIA

By Months

CALIFORNIA

	Barrels
January	10,177,000
February	9,184,000
March	10,482,000
April	10,170,000
May	10,448,000
June	10,120,000
July	10,247,000
August	10,026,000
September	7,894,000
October	7,065,000
November	8,804,000
December (Estimated)	9,650,000
Totals 1921	114,267,000



Parkersburg Tanks saving the oil from a 470-foot, 1500-barrel well on lease of Illinois-Kentucky Syndicate in the Rockfield District southwest of Bowling Green, Ky.

Parkersburg Gas Tight Steel Tanks Save All the Oil As it Comes from the Well

THERE is no lowering of grade of oil stored in Parkersburg Gas Tight Steel Tanks—none of the light hydrocarbons escape either in filling or in standing.

Claims for Parkersburg Gas Tight Steel Tanks are proven by United States Government tests. The savings offered are positive and substantial—not problematical and contingent on the success of experiments.

Write for Steel Tank Catalogue and Conservation Booklet

The Parkersburg Rig & Reel Co.

Main Office and Works
Parkersburg, West Virginia

Western Sales Office
Kennedy Bldg., Tulsa, Okla.

District Offices and Distributing Warehouses from which Parkersburg Service is Available

TEXAS
Ranger
Houston
Breckenridge
Leeray
Graham
Mexia
Rising Star

KANSAS
Florence
Eldorado
Peabody
Grenola

KENTUCKY
Bowling Green

ARKANSAS
El Dorado

MONTANA
Winnett

WEST VIRGINIA
Parkersburg
Clarksburg

WYOMING
Casper
Osage

LOUISIANA
Shreveport
Homer
Gahagan
Haynesville

OKLAHOMA
Burbank
Slick
Henryetta
Duncan
Drumright
Hominy
Okmulgee
Walters
Pawhuska
Beggs
Wilson
Bristow
Tulsa

UNITED STATES PRODUCTION BY STATES, 1921

UNITED STATES FIELD STATISTICS FOR 1921

	Completions	Producers	Gas	Failures	Initial Production	Annual Production
New York, Penn., W. Va.	4,122	2,741	606	775	20,175	16,355,000
Ohio	1,318	650	344	344	11,800	7,314,000
California (figures not available)	.....	.....	.....	.....	.....	114,267,000
Kentucky-Tennessee	2,513	1,954	64	495	40,960	9,092,300
Indiana	321	222	9	90	5,870	1,165,000
Illinois	275	165	5	105	4,575	10,085,000
Kansas	962	632	65	265	95,016	34,312,586
Texas	3,111	2,167	.....	944	1,201,185	111,969,575
Oklahoma	4,335	2,551	676	1,008	510,817	111,256,160
Wyoming, Montana, Colorado	425	311	16	97	106,930	20,581,800
Louisiana	590	407	.....	183	249,245	27,814,380
Arkansas	659	620	.....	39	568,885	10,645,415
Totals 1921	18,631	12,420	1,785	4,345	2,815,458	474,858,216
Totals 1920	32,452	25,179	.....	5,673	3,449,960	443,402,000

WYOMING

	Barrels
January	1,464,000
February	1,497,000
March	1,614,000
April	1,913,000
May	1,976,000
June	1,858,000
July	1,143,600
August	1,472,000
September	1,364,000
October	1,481,800
November	1,504,400
December	*1,750,000
Totals 1921	19,037,800

*Estimated.

KENTUCKY

	Barrels
January	905,500
February	695,000
March	779,000
April	767,000
May	826,300
June	730,000
July	706,600
August	786,000
September	729,900
October	716,400
November	717,800
December	*720,000
Totals 1921	9,979,500

*Estimated.

ILLINOIS

	Barrels
January	852,000
February	785,000
March	963,000
April	765,000
May	863,000
June	823,000
July	805,000
August	846,000
September	806,000
October	890,000
November	837,000
December	*850,000
Totals 1921	10,085,000

*Estimated.

WEST VIRGINIA

	Barrels
January	645,000
February	634,000
March	756,000
April	691,000
May	712,000
June	631,000
July	727,000
August	681,000
September	613,000
October	628,000
November	607,000
December	*620,000
Totals 1921	7,945,000

*Estimated.

PENNSYLVANIA

	Barrels
January	619,000
February	603,000
March	672,000
April	636,000
May	678,000
June	615,000
July	566,000
August	675,000
September	602,000
October	580,000
November	594,000
December	*600,000
Totals 1921	7,440,000

*Estimated.

INDIANA

	Barrels
January	95,000
February	92,000
March	101,000
April	102,000
May	107,000
June	105,000
July	99,000
August	102,000
September	94,000
October	92,000
November	86,000
December	*90,000
Totals 1921	1,165,000

*Estimated.

NEW YORK

	Barrels
January	84,000
February	66,000
March	86,000
April	84,000
May	104,000
June	78,000
July	79,000
August	86,000
September	88,000
October	77,000
November	68,000
December	*70,000
Totals 1921	970,000

*Estimated.

U. S. FIELD STATISTICS FOR 1920

Pa., W. Va., and New York	Completions	Producers	Failures	Initial Prod.
	6,045	5.042	1,003	38,575
Indiana	475	362	113	7,065
Ky.-Tenn.	2,966	2,679	287	84,880
Ohio	1,877	1,398	479	30,370
Illinois	402	272	130	5,585
Wyo.-Montana	368	288	80	42,560
California	587	....	...	169,500
Kansas	2,831	2,255	566	196,820
Texas	7,044	5,116	1,928	1,428,315
Oklahoma	8,546	6,755	1,791	787,525
Louisiana	1,311	1,012	299	658,765
Totals	32,452	25,179*	5,673	3,449,960

*Includes gassers.

OHIO

	Barrels
January	620,000
February	602,000
March	659,000
April	622,000
May	657,000
June	655,000
July	576,000
August	627,000
September	589,000
August	627,000
October	571,000
November	566,000
December	*570,000
Totals 1921	7,315,000

*Estimated.

MONTANA

	Barrels
January	78,000
February	115,000
March	97,000
April	96,000
May	118,000
June	114,000
July	116,000
August	119,000
September	137,000
October	153,000
November	143,000
December	*150,000
Totals 1921	1,436,000

*Estimated.

COLORADO

	Barrels
January	9,000
February	9,000
March	10,000
April	10,000
May	10,000
June	9,000
July	8,400
August	9,000
September	9,000
October	8,200
November	8,600
December	*8,000
Totals 1921	108,200

*Estimated.

TENNESSEE

	Barrels
January	1,500
February	1,000
March	1,000
April	1,300
May	700
June	1,000
July	1,400
August	1,000
September	1,100
October	600
November	1,200
December	*1,000
Totals 1921	12,800

*Estimated.

FIELD STATISTICS

PENNSYLVANIA*

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	468	327	56	85	2,635
February	485	339	52	94	3,615
March	392	261	63	68	2,325
April	348	228	47	73	1,770
May	372	256	34	82	1,515
June	360	250	41	69	1,460
July	298	191	54	53	1,045
August	252	153	48	51	1,245
September	212	122	39	51	785
October	260	164	49	47	955
November	322	209	60	53	1,330
December	353	241	63	49	1,495
Totals 1921	4,122	2,741	606	775	20,175
Year 1920	6,045	5,042¶	...	1,003	38,575

*Includes West Virginia and New York.
¶Includes gas wells.

The Continental Supply Company

QUALITY SERVICE PRICE

Branch Stores in All Prominent Oil Country Points

Amarillo, Texas
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Chanute, Kansas
Charleston, West Virginia
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Duncan, Oklahoma
Eastland, Texas
El Dorado, Arkansas
El Dorado, Kansas
Elgin, Kansas
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Houston, Texas
Humble, Texas
Lander, Wyoming
Logan, Ohio
Louisa, Kentucky
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Mexia, Texas
Morris, Oklahoma
Newark, Ohio
Oil City, Louisiana
Okmulgee, Oklahoma
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An organization whose every effort is to serve the Oil and Gas industry with the best material obtainable.

Fifty-seven branch stores located in the fields to enable us to give prompt service to our customers.

Goods of Proven Quality
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Continental Service Is Super Service

The Continental Supply Company

Oil and Gas Well Supplies

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EXPORT OFFICE: 2 Rector Street, New York City.

GENERAL OFFICES: St. Louis, Missouri

UNITED STATES PRODUCTION BY FIELDS, 1921

1921

INDIANA

Month—	Completions	Producers	Gas	Failures	Initial Prod.
January	30	25	..	5	785
February	21	17	..	4	675
March	43	36	1	6	860
April	32	21	..	11	550
May	35	26	..	9	510
June	39	30	..	9	870
July	30	17	..	13	360
August	34	16	5	13	620
September	19	11	2	6	255
October	9	4	..	5	120
November	18	10	1	7	120
December	11	9	..	2	145
Totals 1921	321	222	9	90	5,870
Year 1920	475	362¶	...	113	7,065

¶Includes gas wells.

OHIO

January	102	75	7	20	1,610
February	141	77	27	37	1,435
March	136	58	34	44	1,010
April	74	56	10	18	1,700
May	83	56	10	27	915
June	137	76	13	48	1,165
July	122	55	37	30	810
August	85	26	38	21	575
September	112	36	50	26	765
October	111	36	52	23	480
November	89	48	19	22	740
December	126	51	47	28	595
Totals 1921	1,318	650	344	344	11,800
Year 1920	1,877	1,398¶	...	479	30,370

¶Includes gas wells.

KENTUCKY-TENNESSEE

January	205	174	5	26	4,080
February	248	230	2	16	7,275
March	200	178	6	16	3,175
April	173	155	2	16	3,100
May	227	195	3	29	3,635
June	380	268	2	110	3,845
July	215	149	10	56	2,125
August	240	156	4	80	2,000
September	152	94	11	47	3,940
October	135	94	7	34	3,045
November	148	110	9	29	2,065
December	190	151	3	36	2,675
Totals 1921	2,513	1,954	64	495	40,960
Year 1920	2,966	2,679¶	...	287	84,880

¶Includes gas wells.

ILLINOIS

January	22	14	..	8	260
February	26	22	..	4	535
March	30	24	..	6	500
April	26	13	..	13	295
May	34	16	..	18	645
June	37	24	..	13	855
July	18	5	5	8	460
August	20	12	..	8	200
September	13	9	..	44	175
October	17	8	..	9	295
November	20	10	..	10	170
December	12	8	..	4	185
Totals 1921	275	165	5	105	4,575
Year 1920	402	272¶	...	130	5,585

¶Includes gas wells.

WYOMING-MONTANA

January	37	27	3	7	3,845
February	33	26	2	5	4,510
March	38	31	1	6	10,250
April	50	44	1	5	11,800
May	44	33	..	11	11,300
June	27	21	1	5	9,160
July	35	28	1	6	8,000
August	28	15	2	11	8,750
September	48	27	..	21	9,400
October	22	18	..	4	8,010
November	36	19	5	11	13,130
December	27	22	..	5	8,775
Totals 1921	425	311	16	97	106,930
Year 1920	368	288	...	80	42,560

1920

INDIANA

	Completions	Producers	Failures	Initial Prod.	Monthly Prod
January	24	17	7	540	67,000
February	12	8	4	110	68,000
March	38	25	13	435	73,000
April	30	21	9	360	74,000
May	40	27	13	560	78,000
June	56	47	9	810	80,000
July	25	19	6	375	79,000
August	42	31	11	545	77,000
September	60	43	17	1,120	86,000
October	45	34	11	660	85,000
November	40	34	6	750	81,000
December	63	56	7	800	84,000
Totals 1920	475	362	113	7,065	932,000
Year 1919	..	...	...	....	929,780

OHIO

January	93	73	20	2,020	531,000
February	75	39	36	1,705	522,000
March	118	82	36	2,590	641,000
April	164	136	28	3,140	611,000
May	134	102	32	3,230	630,000
June	195	143	52	3,475	654,000
July	172	140	32	3,950	657,000
August	180	132	48	1,675	658,000
September	200	155	45	2,080	640,000
October	198	150	48	2,525	628,000
November	194	137	57	2,065	602,000
December	154	109	45	1,915	638,000
Totals 1920	1,877	1,398	479	30,370	7,412,000
Year 1919	..	...	...	.....	8,243,592

PENNSYLVANIA

January	330	264	66	2,500	534,000
February	289	245	44	1,480	530,000
March	315	273	42	2,300	666,000
April	440	360	80	2,740	636,000
May	476	395	81	2,485	651,000
June	525	435	90	3,175	648,000
July	545	430	115	3,750	650,000
August	601	498	103	4,865	640,000
September	594	484	110	4,430	626,000
October	641	550	91	5,450	646,000
November	732	629	103	2,975	603,000
December	557	479	78	2,425	624,400
Totals 1920	6,045	5,042	1,003	38,575	7,454,000
Year 1919	..	...	...	.....	9,441,936

KENTUCKY-TENNESSEE*

January	210	190	20	4,610	635,000
February	197	167	30	3,105	583,000
March	230	211	19	5,800	720,000
April	284	255	29	9,000	717,000
May	270	241	29	9,855	768,000
June	303	272	31	8,730	754,000
July	191	168	23	8,110	749,000
August	261	236	25	9,800	775,000
September	235	220	15	7,500	766,000
October	260	241	19	8,615	761,000
November	290	260	30	6,055	724,000
December	235	218	17	3,700	741,000
Totals 1920	2,966	2,679	287	84,880	8,692,000
Year 1919	..	...	...	.....	5,027,904

*Tennessee's production was about 1,000 barrels a month.

WYOMING

January	18	13	5	1,525	1,169,000
February	18	14	4	1,605	1,167,000
March	18	12	6	4,700	1,316,000
April	13	11	2	1,155	1,303,000
May	17	14	3	1,000	1,368,000
June	30	27	3	3,740	1,625,000
July	30	25	5	3,805	1,586,000
August	42	32	10	3,000	1,524,000
September	44	31	13	3,780	1,573,000
October	42	35	7	4,550	1,676,000
November	43	33	10	2,420	1,340,000
December	53	41	12	11,280	1,424,000
Totals 1920	368	288	80	42,560	17,071,000
Year 1919	..	...	...	.....	13,342,320

ILLINOIS

January	22	13	9	235	887,000
February	20	15	5	240	831,000
March	21	18	3	375	993,000
April	28	17	11	260	884,000
May	35	27	8	365	935,000
June	53	31	22	900	931,000
July	36	27	9	565	925,000
August	37	22	15	690	924,000
September	46	34	12	520	903,000
October	32	22	10	455	872,000
November	33	23	10	495	847,000
December	39	23	16	485	840,000
Totals 1920	402	272	130	5,585	10,772,000
Year 1919	..	...	...	.....	12,436,000

1921

KANSAS

	Barrels
January	2,620,430
February	2,243,308
March	2,409,419
April	2,668,800
May	3,031,885
June	3,173,640
July	3,398,220
August	3,114,800
September	2,887,290
October	2,973,962
November	2,889,390
December	2,901,442
Total 1921	34,312,586
Year 1920	38,501,000

1920

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	187	156	31	18,800	2,969,000
February	180	126	54	13,985	2,983,000
March	205	186	19	12,100	3,328,000
April	250	199	51	11,540	3,239,000
May	311	251	60	13,635	3,377,000
June	313	238	75	14,615	3,168,000
July	301	242	59	14,235	3,276,000
August	216	165	53	18,830	3,375,000
September	151	125	26	20,070	3,258,000
October	178	149	29	18,220	3,269,000
November	251	194	57	18,780	3,215,000
December	288	226	62	22,010	3,044,000
Totals 1920	2,831	2,255	566	196,820	38,501,000
Year 1919	3,445	2,795	650	173,500	34,769,100

KANSAS PRODUCTION 1920
U. S. Geological Survey

	Barrels
January	2,969,000
February	2,983,000
March	3,328,000
April	3,239,000
May	3,377,000
June	3,168,000
July	3,276,000
August	3,375,000
September	3,258,000
October	3,269,000
November	3,215,000
December	3,044,000
Totals 1920	38,501,000

KANSAS BY COUNTIES FOR 1921

Month—	Completions	Producers	Gas	Failures	Initial Prod.
Allen	35	32	1	2	360
Butler	237	167	10	60	21,995
Chautauqua	65	40	5	20	790
Cowley	14	3	2	9	215
Elk	56	23	9	24	1,360
Franklin	12	9	2	1	255
Greenwood	112	75	3	34	4,750
Lyon	11	3	..	8	90
Marion	214	158	14	42	62,525
Montgomery	45	30	8	7	541
Woodson	42	37	4	1	1,345
Miscellaneous Counties	119	55	7	57	790
Totals 1921	962	632	65	265	95,016

KANSAS COUNTIES BY MONTHS, 1921

ALLEN

January	23	21	1	1	240
March	8	7	..	1	75
June	4	4	..	..	45
Totals 1921	35	32	1	2	360

BUTLER

January	31	22	8	1	2,165
February	33	25	1	7	2,255
March	38	22	..	16	2,195
April	10	5	..	5	320
May	18	14	1	3	1,170
June	22	21	..	1	2,015
July	25	16	..	9	3,075
August	8	5	..	3	4,030
September	7	6	..	1	490
October	8	3	..	5	220
November	17	11	..	6	1,510
December	20	17	..	3	2,550
Totals 1921	237	167	10	60	21,995

(Continued on page 90.)

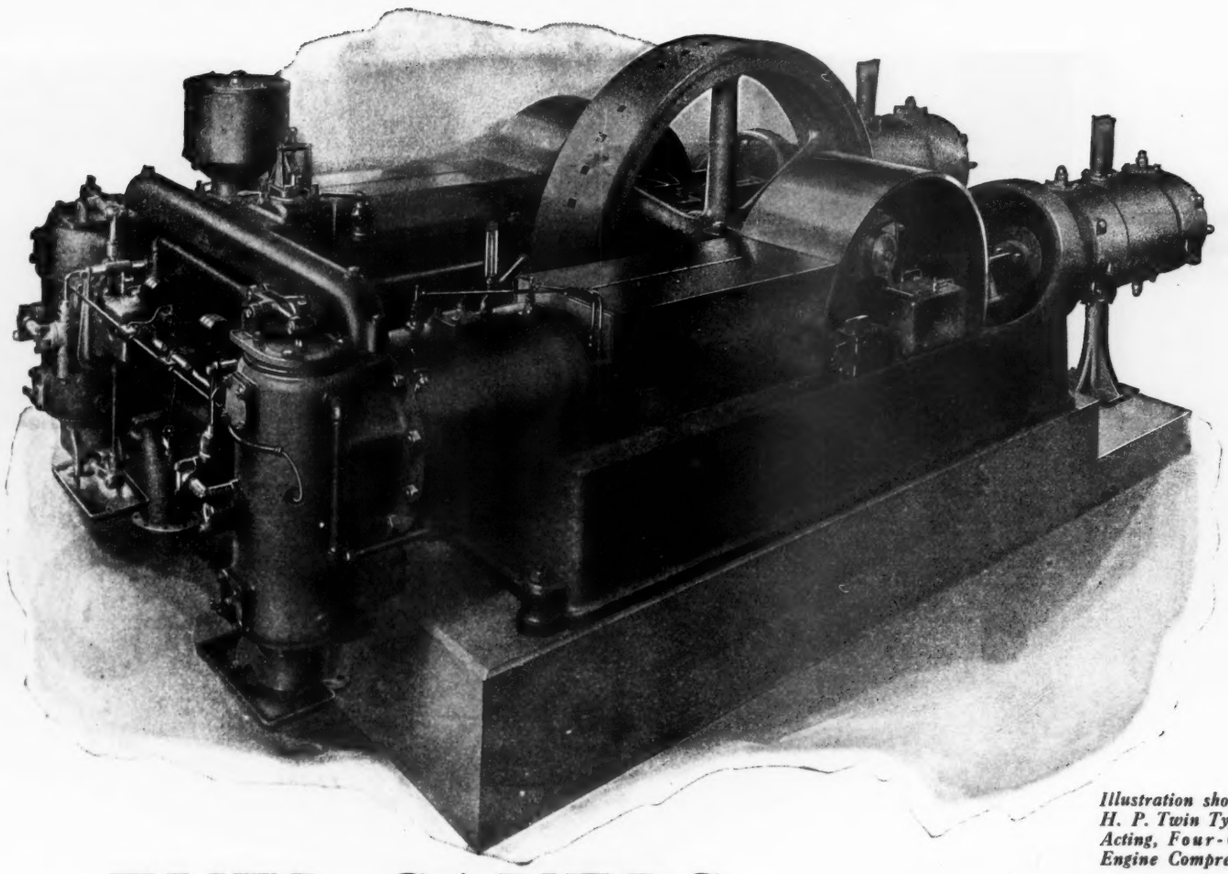

Illustration shows 150 B. H. P. Twin Type, Single-Acting, Four-Cycle Gas Engine Compressor Unit.

FUEL SAVERS—

The superior fuel economy of 4-cycle Gas Engines is admitted without question. Fuel saving is in harmony with natural gas conservation. Can you then afford to overlook this important feature of the Cooper Gas Engine Compressor?

Remember, too, that Cooper units are direct connected. This feature lowers the cost of buildings, foundations and the complete installation, and delivers the full 100 per cent of the power of the Engine to the compressor rods—another considerable economy.

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Made under the Guiberson-Whittier basic patent, and our own exclusive thread patents.

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Screw tight in less than four turns. This fact, coupled with ability to stand rough handling, has made possible remarkable speed records both going into the well and coming out.

Write for catalog

COMPANY

TEXAS

OKLAHOMA PRODUCTION FIGURES FOR YEAR

BY MONTHS

	Barrels
January	9,668,280
February	8,495,940
March	9,189,950
April	8,728,200
May	8,435,695
June	9,032,250
July	10,013,080
August	9,650,705
September	9,292,240
October	9,646,000
November	9,416,010
December	9,687,810
Totals 1921	111,256,160

BY FIELDS

Month—	Completions	Producers	Gas	Failures	Initial Prod.
North Oklahoma	1,084	717	206	161	125,483
South Oklahoma	1,227	786	179	262	170,063
Okla. Old Fields	858	575	83	200	95,273
Okmulgee District	1,005	499	184	322	115,515
Miscellaneous	161	74	24	63	4,483
Totals 1921	4,335	2,651	676	1,008	510,817

OKLAHOMA

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	461	349	112	34,770	7,958,000
February	570	422	148	41,975	7,933,000
March	693	567	126	59,010	8,689,000
April	720	554	166	53,745	8,273,000
May	893	697	196	83,385	8,824,000
June	749	589	160	85,660	9,049,000
July	709	548	161	69,300	9,328,000
August	752	590	162	80,690	9,371,000
September	629	527	102	86,160	9,093,000
October	949	788	161	86,445	9,437,000
November	713	541	142	69,770	9,028,000
December	708	553	155	60,615	8,742,000
Totals 1920	8,546	6,755	1,791	787,525	105,725,000
Year 1919	8,200	5,925	2,275	490,000	81,127,900

NORTH OKLAHOMA

Month—	Completions	Producers	Gas	Failures	Initial Prod.
January	299	213	65	21	14,859
February	166	91	60	15	11,228
March	127	79	8	40	5,655
April	98	56	25	17	5,850
May	64	47	4	13	17,066

NORTH OKLAHOMA—Continued

Month—	Completions	Producers	Gas	Failures	Initial Prod.
June	79	50	7	22	4,068
July	54	36	8	10	9,232
August	41	32	5	4	15,967
September	27	19	5	3	6,700
October	42	34	2	6	15,017
November	30	19	7	4	9,786
December	57	41	10	6	11,055
Totals 1921	1,084	717	206	161	125,483

SOUTH OKLAHOMA

January	128	88	27	13	12,922
February	151	92	41	18	14,689
March	80	49	10	21	11,703
April	88	64	6	18	13,779
May	100	68	13	19	18,870
June	138	98	18	22	25,423
July	170	103	18	49	29,904
August	82	57	9	16	18,767
September	74	38	13	23	9,167
October	92	57	4	31	7,395
November	58	36	10	12	3,824
December	66	36	10	20	3,620
Totals 1921	1,227	786	179	262	170,063

OLD FIELDS

January	155	112	13	30	10,912
February	88	63	18	7	6,111
March	90	66	9	15	9,471
April	104	70	8	26	15,240
May	72	48	2	22	4,671
June	83	51	6	26	8,174
July	82	44	5	33	6,057
August	24	19	2	3	6,085
September	48	23	3	22	4,855
October	29	21	4	4	5,882
November	36	23	7	6	4,275
December	47	35	6	6	13,540
Totals 1921	858	575	83	200	95,273

OKMULGEE SECTION

January	118	79	15	24	18,596
February	126	68	35	23	13,524
March	103	45	19	39	10,940
April	103	54	13	36	11,535
May	75	31	17	27	18,870
June	101	53	16	32	7,322
July	82	41	14	27	8,046
August	56	19	8	29	3,145
September	56	28	12	16	6,395
October	66	26	11	29	3,740
November	45	23	8	14	2,162
December	74	32	16	26	11,240
Totals 1921	1,005	499	184	322	115,515

MISCELLANEOUS

January	....	....	....	....	.....
February	11	3	5	3	156
March	5	....	2	3	.....
April	7	3	...	4	400
May	6	2	2	2	60
June	....	....	....	....	.....
July	....	....	....	....	.....
August	36	23	2	11	800
September	25	13	2	10	900
October	14	5	3	6	267
November	45	25	5	15	1,900
December	12	....	3	9	.....
Totals 1921	161	74	24	63	4,483

OKLAHOMA BY MONTHS

JANUARY

Month—	Completions	Producers	Gas	Failures	Initial Prod.
North Oklahoma	299	213	65	21	14,859
South Oklahoma	128	88	27	13	12,922
Okla. Old Fields	88	63	18	7	6,111
Okmulgee Section	118	79	15	24	18,596
Miscellaneous	....	....	...	....	.....
Totals 1921	700	492	120	88	57,289

FEBRUARY

North Oklahoma	166	91	60	15	11,228
South Oklahoma	151	92	41	18	14,689
Okla. Old Fields	88	63	18	7	6,111
Okmulgee District	126	68	35	23	13,524
Miscellaneous	11	3	5	3	156
Totals 1921	542	317	159	66	45,708

(Continued on page 92.)

KANSAS PRODUCTION FOR 1921

(Continued from page 86.)

CHAUTAUQUA

Month—	Completions	Producers	Gas	Failures	Initial Prod.
January	21	12	5	4	195
February	12	5	..	7	60
March	16	19	..	7	85
April	1	..	..	1	.....
May	1	1	..	..	300
June	3	2	..	1	140
December	1	1	..	..	10
Totals 1921	65	40	5	20	790

COWLEY

February	1	..	..	1	...
April	3	..	..	3	...
May	2	..	2	..	...
July	1	..	..	1	...
August	1	..	..	1	...
November	1	..	..	1	...
December	5	3	..	2	215
Totals 1921	14	3	2	9	215

ELK

January	4	2	2	..	...
February	3	3	..	..	70
March	5	1	..	4	170
April	10	4	..	6	345
May	8	4	1	3	450
June	7	2	2	3	55
July	7	3	1	3	45
August	1	1	..	..	50
September	3	..	1	2	...
October	1	1	..	..	25
November	4	2	1	1	150
December	3	..	1	2	...
Totals 1921	56	23	9	24	1,360

FRANKLIN

January	8	6	1	1	210
February	1	1	..	..	15
March	1	1	..	..	15
May	1	..	1	..	...
July	1	1	..	..	15
Totals 1921	12	9	2	1	255

GREENWOOD

January	17	14	3	..	930
February	12	9	..	3	910
March	8	3	..	5	370
April	11	5	..	6	255
May	12	8	..	4	535
June	5	4	..	1	115
July	12	7	..	5	375
August	2	2	..	..	55
September	7	5	..	2	245
October	9	8	..	1	275
November	9	2	..	7	125
December	8	8	..	..	560
Totals 1921	112	75	3	34	4,750

LYON

Month—	Completions	Producers	Gas	Failures	Initial Prod.
April	2	..	..	2	...
May	4	1	..	3	50
July	3	1	..	2	35
August	1	1	..	..	5
November	1	..	..	1	...
Totals 1921	11	3	..	8	90

MARION

January	43	29	14	..	10,385
February	27	15	..	12	7,505
March	27	22	..	5	12,030
April	35	29	..	6	12,680
May	22	15	..	1	4,010
June	31	27	..	4	9,745
July	13	11	..	2	2,960
August	3	3	..	..	2,200
September	5	2	..	3	600
October	1	1	..	..	50
November	3	2	..	1	...
December	4	2	..	2	360
Totals 1921	214	158	14	42	62,525

MONTGOMERY

January	27	19	8	..	515
February	5	3	..	2	15
March	9	7	..	2	10
June	4	1	..	3	1
Totals 1921	45	30	8	7	541

WOODSON

January	3	3	..	..	125
March	9	6	2	1	300
June	5	4	1	..	155
October	9	9	..	..	270
November	5	4	1	..	170
December	11	11	..	..	325
Totals 1921	42	37	4	1	1,345

MISCELLANEOUS

January	25	9	..	16	40
February	2	1	1	..	10
March	12	6	..	6	45
April	3	..	..	3	...
June	2	..	..	2	...
July	7	..	..	7	...
August	1	..	..	1	...
October	3	..	1	2	...
November	25	18	..	7	...
December	39	21	5	13	695
Totals 1921	119	55	7	57	790

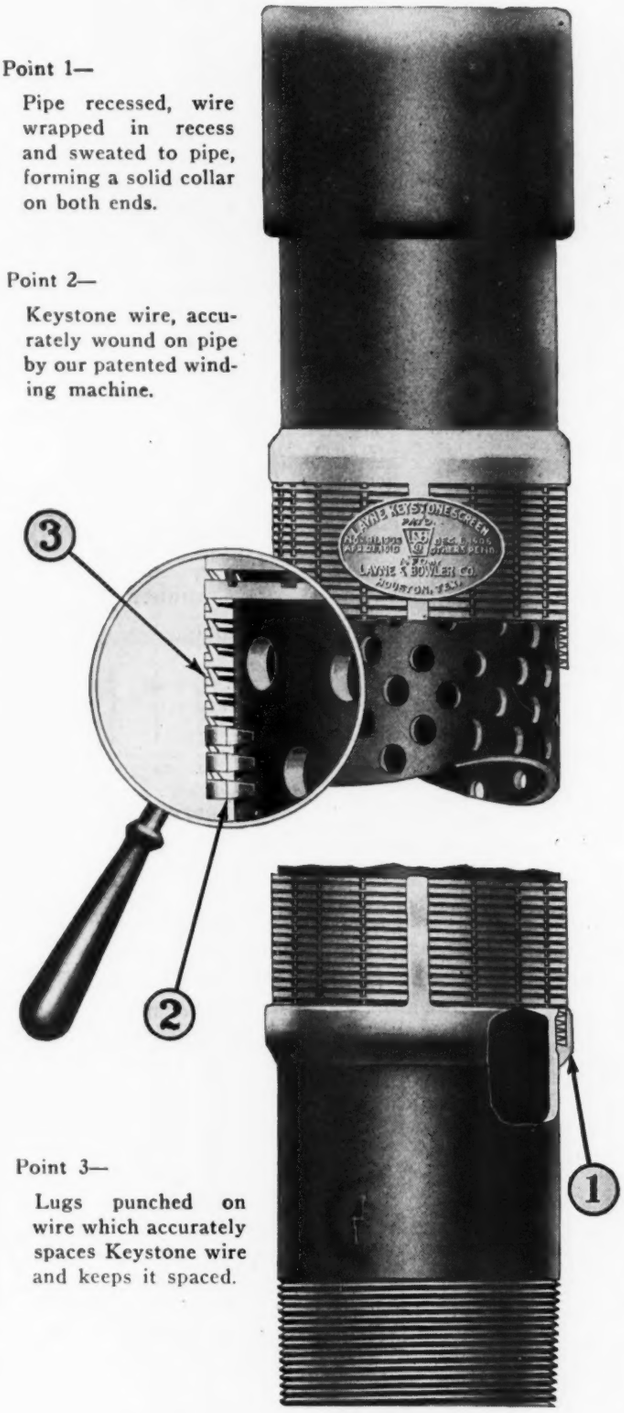
Strainer Satisfaction

Point 1—

Pipe recessed, wire wrapped in recess and sweated to pipe, forming a solid collar on both ends.

Point 2—

Keystone wire, accurately wound on pipe by our patented winding machine.



Point 3—

Lugs punched on wire which accurately spaces Keystone wire and keeps it spaced.

The Layne Patent Keystone Wire Wrapped

STRAINER

For Oil Wells

This strainer has been used extensively by principal oil companies for the past fifteen years, and is unexcelled for downright satisfaction and freedom from cleaning troubles.

Manufactured in brass or galvanized wire in any gauge to suit any formation.

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LOUISIANA PRODUCTION FOR 1920 AND 1921

1921

BY FIELDS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Edgerly	3	2	1	140	265,720
Vinton	20	19	1	2,635	1,361,575
Evangeline	10	8	2	3,155	240,915
Anse La Butte	6	1	5	500	53,435
Homer	120	78	42	87,535	13,337,360
Haynesville	97	86	11	130,265	3,021,155
Bull Bayou	99	74	25	11,250	3,744,440
Caddo	116	95	21	11,815	5,762,030
Wildcats	119	44	75	1,950*	27,750
Totals 1921	590	407	183	249,245	27,814,380

* and gas.

1920

BY FIELDS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Homer	565	439	126	549,645	24,288,200
Bull Bayou	366	316	50	83,705	6,393,050
Caddo	178	147	31	12,615	6,354,100
Vinton	35	26	9	5,415	1,312,090
Edgerly	20	16	4	3,635	480,220
Evangeline	10	9	1	600	244,330
La. Wildcats	137	59	78	3,150*	50,050
Totals 1920	1,311	1,012	299	658,765*	38,690,040
Totals, 1919	776	620	156	469,157*	17,477,205

*—Also Gas.

OKLAHOMA

(Continued from page 90.)

MARCH

Month—	Completions	Producers	Gas	Failures	Initial Prod.
North Oklahoma	127	79	8	40	5,655
South Oklahoma	80	49	10	21	11,703
Okla. Old Fields	90	66	9	15	9,471
Okmulgee District	103	45	19	30	10,940
Miscellaneous	5	....	2	3	.....
Totals 1921	405	239	48	118	37,769

APRIL

North Oklahoma	98	56	25	17	5,850
South Oklahoma	88	64	6	18	13,779
Okla. Old Fields	104	70	8	26	15,240
Okmulgee District	103	54	13	36	11,535
Miscellaneous	7	3	...	4	400
Totals 1921	400	247	52	101	46,804

MAY

North Oklahoma	64	47	4	13	17,066
South Oklahoma	100	68	13	19	18,870
Okla. Old Fields	72	48	2	22	4,671
Okmulgee District	75	31	17	27	18,870
Miscellaneous	6	2	2	2	60
Totals 1921	317	196	38	83	59,537

JUNE

North Oklahoma	79	50	7	22	4,068
South Oklahoma	138	98	18	22	25,423
Okla. Old Fields	83	51	6	26	8,174
Okmulgee District	101	53	16	32	7,322
Miscellaneous	....	....	...	....	.....
Totals 1921	401	252	47	102	44,987

JULY

North Oklahoma	54	36	8	10	9,232
South Oklahoma	170	103	18	49	29,904
Okla. Old Fields	82	44	5	33	6,059
Okmulgee District	82	41	14	27	8,046
Miscellaneous	....	....	...	....	.....
Totals 1921	388	224	45	119	53,241

AUGUST

North Oklahoma	41	32	5	4	15,967
South Oklahoma	82	57	9	16	18,767
Okla. Old Fields	24	19	2	3	6,085
Okmulgee District	56	19	8	29	3,145
Miscellaneous	36	23	2	11	800
Totals 1921	239	150	26	63	44,764

BY MONTHS

JANUARY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Edgerly	2	1	1	40	37,870
Vinton	5	5	..	675	113,460
Evangeline	1	1	..	40	22,445
Anse La Butte	..	..	..	....	.....
Homer	37	25	12	31,775	1,632,150
Haynesville	..	..	..	....	.....
Bull Bayou	25	18	7	2,565	405,480
Caddo	25	22	3	6,400	566,680
Wildcats	17	10	7	475*	10,000
Totals 1921	112	82	30	41,945	2,788,035

*and gas.

FEBRUARY

Edgerly	1	1	..	100	32,375
Vinton	4	4	..	480	114,500
Evangeline	2	2	..	195	25,200
Anse La Butte	..	..	..	....	.....
Homer	16	14	2	19,090	1,500,100
Haynesville	..	..	..	....	.....
Bull Bayou	19	13	6	1,740	357,000
Caddo	27	24	3	1,175	506,800
Wildcats	9	4	5	25*	3,700
Totals 1921	78	62	16	22,805	2,539,675

*and gas.

MARCH

Edgerly	..	..	..	....	19,860
Vinton	2	2	..	125	127,875
Evangeline	..	..	..	....	22,320
Anse La Butte	1	1	..	500	4,215
Homer	26	14	12	31,085	1,444,215
Haynesville	..	..	..	....	.....
Bull Bayou	12	9	3	1,165	363,670
Caddo	16	12	4	785	536,495
Wildcats	9	3	6	90*	2,000
Totals 1921	66	41	25	33,750	2,520,650

*and gas.

APRIL

Edgerly	..	..	..	....	30,000
Vinton	2	2	..	55	120,450
Evangeline	..	..	..	....	21,450
Anse La Butte	..	..	..	....	8,070
Homer	19	13	6	4,865	1,280,040
Haynesville	..	..	..	....	.....
Bull Bayou	12	10	2	2,850	356,250
Caddo	17	15	2	1,255	535,560
Wildcats	10	5	5	gas	3,600
Totals 1921	60	45	15	9,025	2,355,420

SEPTEMBER

Month—	Completions	Producers	Gas	Failures	Initial Prod.
North Oklahoma	27	19	5	3	6,700
South Oklahoma	74	38	13	23	9,167
Okla. Old Fields	48	23	3	22	4,855
Okmulgee District	56	28	12	16	6,395
Miscellaneous	25	13	2	10	900
Totals 1921	230	121	35	74	28,017

OCTOBER

North Oklahoma	42	34	2	6	15,017
South Okdahoma	92	57	4	31	7,395
Okla. Old Fields	29	21	4	4	5,882
Okmulgee District	66	26	11	29	3,740
Miscellaneous	14	5	3	6	267
Totals 1921	243	143	24	76	32,301

NOVEMBER

North Oklahoma	30	19	7	4	9,786
South Oklahoma	58	36	10	12	3,824
Okla. Old Fields	36	23	7	6	4,275
Okmulgee District	45	23	8	14	2,162
Miscellaneous	45	25	5	15	1,900
Totals 1921	214	126	37	51	21,947

DECEMBER

North Oklahoma	57	41	10	6	11,055
South Oklahoma	66	36	10	20	3,620
Okla. Old Fields	47	35	6	6	13,540
Okmulgee District	74	32	16	26	11,240
Miscellaneous	12	....	3	9	.....
Totals 1921	256	144	45	67	39,455

1921

MAY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Edgerly	..	..	..	....	25,825
Vinton	2	1	1	125	123,440
Evangeline	1	1	..	1,950	20,710
Anse La Butte	2	..	2	....	7,690
Homer	10	4	6	290	1,232,190
Haynesville	2	2	..	7,500	.....
Bull Bayou	5	5	..	490	336,135
Caddo	6	3	3	40	534,070
Wildcats	4	2	2	gas	1,000
Totals 1921	32	18	14	10,395	2,281,060

JUNE

Edgerly	..	..	..	....	19,680
Vinton	2	2	..	1,050	124,110
Evangeline	2	1	1	25	19,860
Anse La Butte	..	..	..	....	8,010
Homer	..	..	..	....	1,071,930
Haynesville	4	3	1	10,000	120,000
Bull Bayou	3	2	1	250	299,790
Caddo	2	1	1	55	490,890
Wildcats	4	1	3	gas	1,000
Totals 1921	17	10	7	11,380	2,155,270

JULY

Edgerly	..	..	..	.....	20,490
Vinton	..	..	..	.....	115,780
Evangeline	1	1	..	20	19,250
Anse La Butte	1	..	1	.....	9,085
Homer	6	5	1	135	1,050,095
Haynesville	6	6	..	6,500	283,830
Bull Bayou	4	4	..	225	302,035
Caddo	5	3	2	1,160	511,035
Wildcats	8	1	7	gas	1,000
Totals 1921	31	20	11	8,040	2,312,600

AUGUST

Edgerly	..	..	..	.....	18,505
Vinton	1	1	..	65	110,050
Evangeline	..	..	..	.....	17,940
Anse La Butte	..	..	..	.....	5,270
Homer	4	1	3	250	946,970
Haynesville	4	3	1	800	270,070
Bull Bayou	4	3	1	200	280,550
Caddo	1	1	..	25	475,275
Wildcats	7	3	4	50*	1,000
Totals 1921	21	12	9	1,390	2,125,630

*And gas.

SEPTEMBER

Edgerly	..	..	..	.....	17,160
Vinton	1	1	..	50	106,620
Evangeline	..	..	..	.....	17,730
Anse La Butte	..	..	..	.....	2,460
Homer	1	1	..	25	885,750
Haynesville	9	7	2	6,200	283,800
Bull Bayou	4	4	..	900	269,790
Caddo	4	4	..	595	451,950
Wildcats	9	3	6	gas	1,200
Totals 1921	28	20	8	7,770	2,036,460

OCTOBER

Edgerly	..	..	..	.....	18,320
Vinton	..	..	..	.....	108,780
Evangeline	1	..	1	.....	16,990
Anse La Butte	..	..	..	.....	2,480
Homer	..	..	..	.....	840,790
Haynesville	8	8	..	16,425	485,305
Bull Bayou	6	3	3	35	263,740
Caddo	3	3	..	85	419,245
Wildcats	14	3	11	gas	1,250
Totals 1921	32	17	15	16,545	2,156,900

NOVEMBER

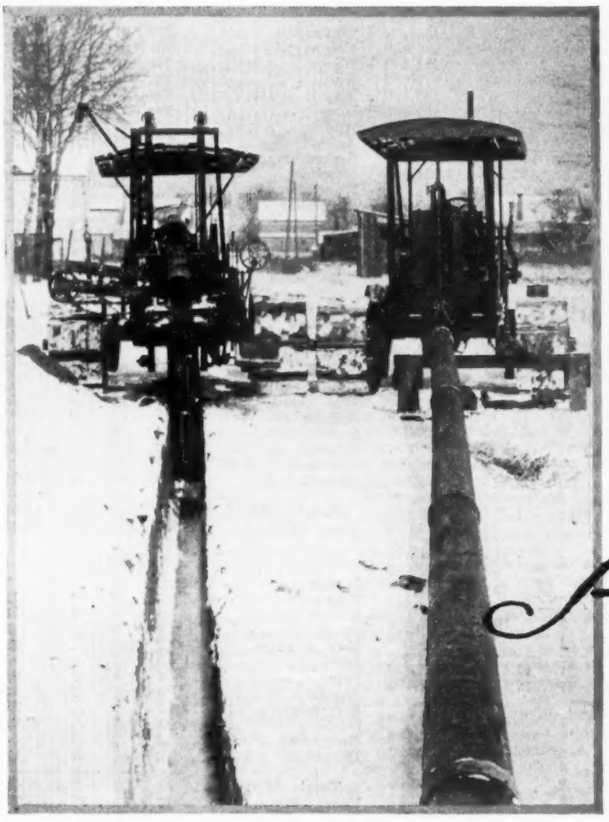
Edgerly	..	..	..	.....	14,060
Vinton	1	1	..	10	96,225
Evangeline	1	1	..	100	17,770
Anse La Butte	..	..	..	.....	2,775
Homer	..	..	..	.....	742,240
Haynesville	22	20	2	15,315	508,650
Bull Bayou	1	..	1	.....	251,740
Caddo	6	4	2	190	372,260
Wildcats	12	5	7	10*	1,000
Totals 1921	43	31	12	15,625	2,006,720

*And gas

DECEMBER

Edgerly	..	..	..	.....	11,625
Vinton	..	..	..	.....	100,285
Evangeline	1	1	..	850	19,250
Anse La Butte	2	..	2	.....	3,380
Homer	1	1	..	20	710,890
Haynesville	42	37	5	67,525	1,069,500
Bull Bayou	4	3	1	830	258,260
Caddo	4	3	1	50	361,770
Wildcats	16	4	12	1,300*	1,000
Totals 1921	70	49	21	70,575	2,535,960

*And gas.



Buckeye No. 3 cuts 15" or 18" wide, 4½' deep. It digs 1000 to 3000 lineal feet per day.

A Superior Ditcher at a Competitive Price

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Ask the men who have dug mile after mile of trench with Buckeyes. They're unanimous in their praise of this steady-working, cost-saving digger.

Let us send you the facts so that you can test these statements for yourself.

At a cost much lower than hand labor, the Buckeye Pipe-Screwing Machine screws the pipe together in a hurry and joins all sections securely.

The Buckeye Traction Ditcher Company

Manufacturers of Pipe-Line Trench Excavators and Pipe Screwing Machines

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Immediate Shipment

Buckeye

1921 LOUISIANA

BY FIELDS

EDGERLY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	2	1	1	40	37,870
February	1	1	..	100	32,375
March	..	..	..	...	19,860
April	..	..	..	...	30,000
May	..	..	..	...	25,825
June	..	..	..	...	19,680
July	..	..	..	...	20,490
August	..	..	..	...	18,505
September	..	..	..	...	17,160
October	..	..	..	...	18,320
November	..	..	..	...	14,060
December	..	..	..	...	11,625
Totals 1921	3	2	1	140	265,720
Year 1920	20	16	4	3,635	480,220

VINTON

January	5	5	..	675	113,460
February	4	4	..	480	114,500
March	2	2	..	125	127,875
April	2	2	..	55	120,450
May	2	1	1	125	123,440
June	2	2	..	1,050	124,110
July	..	..	..	....	115,780
August	1	1	..	65	110,050
September	1	1	..	50	106,620
October	..	..	..	....	108,780
November	1	1	..	10	96,725
December	..	..	..	....	100,285
Totals 1921	20	19	1	2,635	1,361,575
Year 1920	35	26	9	5,415	1,312,090

EVANGELINE

January	1	1	..	15	22,445
February	2	2	..	195	25,200
March	..	..	..	....	22,320
April	..	..	..	....	21,450
May	1	1	..	1,950	20,710
June	2	1	1	25	19,860
July	1	1	..	20	19,250
August	..	..	..	....	17,940
September	..	..	..	....	17,730
October	1	..	1	....	16,990
November	1	1	..	100	17,770
December	1	1	..	850	19,250
Totals 1921	10	8	2	3,155	240,915
Year 1920	10	9	1	600	244,330

ANSE LA BUTTE

March	1	1	..	500	4,215
April	..	..	..	....	8,070
May	2	..	2	....	7,650
June	..	..	..	....	8,010
July	1	..	1	....	9,085
August	..	..	..	....	5,270
September	..	..	..	....	2,460
October	..	..	..	....	2,480
November	..	..	..	....	2,775
December	2	..	2	....	3,380
Totals 1921	6	1	5	500	53,435

HOMER

January	37	25	12	31,775	1,632,150
February	16	14	2	19,090	1,500,100
March	26	14	12	31,085	1,444,215
April	19	13	6	4,865	1,280,040
May	10	4	6	290	1,232,190
June	..	..	..	.....	1,071,930
July	6	5	1	135	1,050,095
August	4	1	3	250	946,970
September	1	1	..	25	885,750
October	..	..	..	.....	840,790
November	..	..	..	.....	742,240
December	1	1	..	20	710,890
Totals 1921	120	78	42	87,535	13,337,360
Year 1920	565	439	126	549,645	24,288,200

HAYNESVILLE

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
May	2	2	..	7,500	.....
June	4	3	1	10,000	120,000
July	6	6	..	6,500	283,830
August	4	3	1	800	270,070
September	9	7	2	6,200	283,800
October	8	8	..	16,425	485,305
November	22	20	2	15,315	508,650
December	42	37	5	67,525	1,069,500
Totals 1921	97	86	11	130,265	3,021,155

BULL BAYOU

January	25	18	7	2,565	405,480
February	19	13	6	1,740	357,000
March	12	9	3	1,165	363,670
April	12	10	2	2,850	356,250
May	5	5	..	490	336,135
June	3	2	1	250	299,790
July	4	4	..	225	302,035
August	4	3	1	200	280,550
September	4	4	..	900	269,790
October	6	3	3	35	263,740
November	1	..	1	...	251,740
December	4	3	1	830	258,260
Totals 1921	99	74	25	11,250	3,744,440
Year 1920	366	316	50	83,705	6,393,050

CADDO

January	25	22	3	6,400	566,680
February	27	24	3	1,175	506,800
March	16	12	4	785	536,495
April	17	15	2	1,255	535,560
May	6	3	3	40	534,070
June	2	1	1	55	490,890
July	5	3	2	1,160	511,035
August	1	1	..	25	475,275
September	4	4	..	595	451,950
October	3	3	..	85	419,245
November	6	4	2	190	372,260
December	4	3	1	50	361,770
Totals 1921	116	95	21	11,815	5,762,030
Year 1920	178	147	31	12,615	6,354,100

WILDCATS

January	17	10	7	475*	10,000
February	9	4	5	25*	3,700
March	9	3	6	90*	2,000
April	10	5	5	...	3,600
May	4	2	2	gas	1,000
June	4	1	3	gas	1,000
July	8	1	7	gas	1,000
August	7	3	3	50	1,000
September	9	3	6	gas	1,200
October	14	3	11	gas	1,250
November	12	5	7	10*	1,000
December	16	4	12	1,300	1,000
Totals 1921	119	44	75	1,950*	27,750
Year 1920	137	59	78	3,150*	50,050

*And gas.

1920 LOUISIANA

HOMER FIELD

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	28	27	1	190,490	1,041,565
February	40	38	2	129,470	2,145,350
March	36	28	8	33,970	2,441,250
April	44	37	7	32,500	2,596,500
May	93	71	22	45,805	2,609,270
June	69	51	18	29,005	2,354,250
July	70	46	24	22,100	2,118,075
August	53	39	14	11,490	2,025,850
September	46	31	15	8,670	1,803,250
October	31	23	8	21,425	1,682,125
November	24	20	4	13,715	1,687,500
December	31	28	3	11,005	1,723,215
Totals 1920	565	439	126	549,645	24,288,200
Year 1919	138	115	23	340,790	1,274,390

BULL BAYOU

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	27	25	2	5,370	667,900
February	22	22	..	5,700	535,850
March	21	20	1	10,010	549,075
April	44	40	4	25,815	621,375
May	45	40	5	19,320	691,270
June	29	25	4	1,960	588,750
July	45	40	5	6,075	518,250
August	37	27	10	2,935	500,465
September	35	29	6	3,035	449,250
October	15	12	3	465	439,890
November	18	13	5	2,090	413,250
December	28	23	5	1,430	417,725
Totals	366	316	50	83,705	6,393,050
Year 1919	132,	126	6	74,225	4,040,965

CADDO

January	6	6	..	460	596,485
February	6	4	2	300	528,700
March	7	6	1	550	548,700
April	4	4	..	140	489,000
May	24	20	4	840	529,480
June	11	11	..	520	493,000
July	17	13	4	755	500,650
August	17	13	4	870	525,945
September	14	9	5	870	523,275
October	34	31	3	2,200	533,200
November	17	13	4	900	526,500
December	21	17	4	4,210	559,165
Totals 1920	178	147	31	12,615	6,354,100
Year 1919	360	301	59	48,380	9,925,960

VINTON

January	3	3	..	90	122,450
February	2	1	1	150	116,300
March	3	2	1	115	122,140
April	1	1	..	25	108,810
May	2	2	..	150	100,050
June	3	3	..	250	104,340
July	6	3	3	850	100,130
August	6	4	2	525	99,690
September	2	2	..	250	90,180
October	3	3	..	2,835	116,715
November	2	..	2	....	117,360
December	2	2	..	175	113,925
Totals 1920	35	26	9	5,415	1,312,090
Year 1919	50	25	25	3,942	1,439,790

EDGERLY

January	..	..	..	....	34,875
February	2	1	1	75	38,250
March	1	1	..	1,000	31,465
April	1	1	..	200	52,560
May	2	2	..	305	36,270
June	2	2	..	420	34,500
July	5	4	1	785	42,100
August	..	..	..	....	40,685
September	1	1	..	400	47,280
October	1	..	1	....	44,115
November	4	4	..	450	40,920
December	1	..	1	....	37,200
Totals 1920	20	16	4	3,635	480,220
Year 1919	24	15	9	1,290	441,100

EVANGELINE

January	..	..	..	....	24,500
February	..	..	..	....	22,900
March	1	..	1	....	21,980
April	..	..	..	....	19,800
May	1	1	..	5	20,770
June	1	1	..	5	18,900
July	..	..	..	....	21,305
August	2	2	..	135	14,260
September	1	1	..	50	19,050
October	2	2	..	300	18,600
November	..	..	..	....	19,875
December	2	2	..	105	22,390
Totals 1920	10	9	1	600	244,330
Year 1919	14	5	9	185	343,000

DISCOVERY WELLS IN NORTH TEXAS

District, Company, Farm and Location—	Date Completed	Pay Sand	Total Depth	Initial Production	Present Production
Electra, Woodruff-Putman, Putnam, H. & H. N. Block 2	April, 1911	1618–24	1630	260	5
South Electra, J. W. Culberson, Waggoner, B. S. & F. No. 13	3-15-14	9?3–32	1407	15	...
Bowers, Bowers Oil Co., Foster-Allen, Stephens-Denison	7-19-20	1828–38	1850	80	15
Burkburnett:					
Old field, Corsicana Oil Co., Schmoker, E. Stanley Survey	7-8-12	....–..	1837	85	4
Townsite, Fowler Farm Oil Co., Fowler, Out. Block 12	7-29-18	1735–39	1739	1600	3
Northwest Extension, Burk-Waggoner Oil Co., Waggoner, Block 84 R. R. V. Lands	4-29-19	1674–1704	1704	2750	30
Shallow, C. C. Bradford, Cropper, Winters Survey 322	6-10-16	626–42	643	5	½
Texhoma, Texhoma Oil & Refining Co., Daniel, H. Hastie Survey 99	10-11-19	128?–1300	1300	225	8
Iowa Park, Forest Oil Co., Ferguson, S. W. C. Block 30, L. Netherly Survey	1-27-13	486–506	506	20	...
K-M-A, K-M-A Oil Co., Munger, Sec. Block 30, Kemps W. V. F.	11-10-19	1762–71	1771	300	30
Holliday, Panther Oil Company, Wilson, Block 12, Am. Tri. Col. Lands	12-2-16	1632–40	1640	35	15
Petrolia, Clay Co. Oil & Pipe Line Co., Lochridge, Blk. 25, Parker Co., School Lands	March, 1905	72?–47	765	200	...
Texhoma (Archer Co.), Texhoma Oil & Ref. Co., S. M. Gose, Blk. 8, Am. Tri. Col. Lands	3-12-21	1602–04	1604	300	150
Panhandle (Carson Co.), Gulf Prod. Co., S. B. Burnett, Sec. 106, Blk. 5, I.&G.N. Sur.	February, 1921	3045–52	3052	165	shut down
Young County:					
Graham, The Texas Co., Graham, Allen Hines, Survey 5	December, 1919	3950–92	4000	40	10
South Bend, Roxana Petroleum Corp., Donnell, T. E. & L. Survey 1111	11-24-19	1870–80	1880	50	10
Bunger, J. B. Ross and C. W. Tyrell, R. D. Owen, Sec. 38, Brazos River-Indian Reservation	8-9-21	1890–95	1900	240	200

IDEAL

THE
IDEAL
TWIN CYLINDER
DRILLING ENGINE

The first "Ideal" twin cylinder drilling engine ever built is still in daily service

The "Ideal" Twin Cylinder Drilling Engine is especially designed for operating rotary drilling equipment and offers the most satisfactory type of driving unit yet developed. It has a continuous flow of power and responds immediately to any change of position of the throttle or reversing lever.

In design and construction it is more substantial and better finished than the ordinary oil country steam engine, embracing, among others, the following distinctive features:

Cylinders, 10-inch bore and 10-inch stroke, giving ample power for all rotary drilling requirements.

Longer stands of pipe can be pulled on the high speed of the draw works, shortening the length of time required for pulling out and changing bits.

Both cylinders mounted on a single base, reducing vibration to minimum and keeping all working parts in perfect alignment.

Cranks being set on quarters, there are no dead centers, resulting in extremely easy starting and smooth operation.

Driving strains on draw works and rotary machine (particularly chain breaking and drill pipe twist-offs) are practically eliminated due to the steady operation of the engine.

Made without a fly-wheel, doing away with the trouble of keeping the balance rims tight and racking an engine to pieces through excessive speed.

The additional cost of this type of engine will be saved on the first well on which it is used.

Manufactured by

UNION TOOL COMPANY

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DISTRIBUTORS:

Mid-Continent and Eastern Oil Fields—National Supply Cos.
California—Associated Supply Co.,
California National Supply Co. Oil Well Equipment Co.
Atlantic Export—National Supply Corp.

TEXAS STATISTICS FOR 1920 AND 1921

1921

BY MONTHS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	463	330	133	125,620	10,309,290
February	420	314	106	88,775	9,033,415
March	332	243	89	111,300	10,112,965
April	301	213	88	88,730	9,690,120
May	248	174	74	65,530	9,711,050
June	251	182	69	62,700	9,246,725
July	222	146	76	52,790	8,538,985
August	200	129	71	25,910	9,040,765
September	144	97	47	68,210	8,076,740
October	171	87	84	84,890	8,008,480
November	144	98	46	158,185	8,630,240
December	215	154	61	268,545	10,886,800
Totals '21	3,111	2,167	944	1,201,185	111,969,575
Year 1920	7,044	5,116	1,928	1,428,315	103,797,890

BY FIELDS

Stephens County	964	788	176	274,225	31,037,710
Eastland County	199	133	66	18,935	5,887,420
Desdemona	46	26	20	2,150	2,467,115
Mexia	83	58	25	369,360	4,716,805
Corsicana	..	..	..	....	305,335
Strawn	..	..	..	....	262,055
Brown County	7	4	3	225	122,475
Moran	..	..	..	....	50,455
Thrall	..	..	..	....	73,280
Coleman County	10	4	6	55	66,190
Burkburnett	352	218	134	11,035	18,561,730
Electra	237	159	78	8,375	4,205,510
Young County	204	168	36	38,960	2,820,080
K. M. A.	104	57	47	3,550	1,193,695
Holliday-Archer Co.	73	36	37	7,970	422,205
Iowa Park	60	45	15	585	224,020
Petrolia	1	..	1	....	132,295
Spindle Top	16	5	11	235	321,080
Markham	7	..	7	....	89,405
Batson	14	12	2	485	516,225
West Columbia	97	77	20	18,265	12,573,450
Humble	16	12	4	3,330	3,098,500
Sour Lake	9	7	2	165	1,749,625
Goose Creek	75	63	12	32,765	5,647,020
Saratoga	30	25	5	1,250	936,695
San Anto. (Somerset)	61	61	..	825	482,340
Barbers Hill	3	1	2	1,000	49,885
Hull	67	55	12	103,310	8,717,970
Blue Ridge	31	17	14	13,430	461,035
Damon Mound	17	9	8	10,820	1,353,960
Dayton	..	..	..	....	30,410
Orange County	27	25	2	58,870	704,870
Pierce Junction	17	13	4	44,000	1,403,940
Nacogdoches	..	..	..	....	103,035
Wildcats	284	88	196	5,505	110,000
Totals	3111	2167	944	1,201,185	111,969,575
Year 1920	7044	5116	1928	1,428,315	103,797,890

1920

BY FIELDS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens Co.	1,346	1,051	295	466,975	23,852,050
Ranger	751	546	205	115,570	10,141,385
Desdemona	845	561	284	50,720	5,097,745
Corsicana	...	.....	.....	.....	530,000
Strawn	...	.....	.....	.....	512,760
Brown Co.	4	3	1	85	114,665
Moran	...	.....	.....	.....	48,575
Thrall	...	.....	.....	.....	8,000
Coleman Co.	15	11	4	205	83,785
Burkburnett	2,317	1,829	488	297,595	27,840,120
Electra	207	122	85	5,710	3,744,665
Young County	16	12	4	2,585	134,895
Holliday Archer Co	...	.....	.....	.....	49,850
Iowa Park K-M-A	384	253	131	30,660	1,310,700
Petrolia	9	3	6	35	135,385
Spindle Top	29	18	11	4,375	323,995
Markham	7	4	3	1,060	75,775
Batson	41	39	2	4,965	484,035
West Col'bia	95	72	23	241,150	10,563,755
Humble	74	57	17	22,040	3,692,115
Sour Lake	42	35	7	3,805	2,073,485
Goose Creek	114	93	21	41,480	5,666,390
Saratoga	70	65	5	4,695	913,735
San Antonio (Somerset)	72	72	.....	855	245,135
Barbers Hill	16	5	11	805	136,375
Hull	148	119	29	95,940	4,468,615
Blue Ridge	15	9	6	8,530	173,085
Damon Mound	27	18	9	18,735	1,259,375
Dayton	...	.....	.....	.....	1,000
Orange Co.	...	.....	.....	.....	4,000
Nacogdoches	...	.....	.....	.....	50,000
Wildcats	400	119	281	9,740	62,440
Toatls 1920	7,044	5,116	1,928	1,428,315	103,979,890
Totals, 1919	4,862	3,722	1,140	2,264,136	96,811,491

1919

BY FIELDS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens Co.	338	290	48	233,567	10,514,216
Ranger	609	522	87	439,092	22,379,665
Desdemona	501	440	61	231,540	7,375,823
Corsicana	.....	.....	.....	.....	150,000
Strawn	1	.....	1	.....	101,300
Brown County	18	5	13	565	213,526
Moran	...	.....	.....	.....	32,500
Thrall	...	.....	.....	.....	8,200
Coleman Co.	29	16	13	346	46,590
Burkburnett	1,989	1,720	269	1,093,522	25,865,757
Electra	222	106	116	4,836	4,177,171
Holliday	3	1	2	20	58,230
Iowa Park K-M-A	184	101	83	2,823	177,950
Petrolia	26	17	9	375	212,624
Spindle Top	24	19	5	1,022	458,680
Markham	12	10	2	361	53,260
Batson	8	5	3	102	502,200
West Col'bia	108	61	47	150,975	8,128,809
Humble	121	71	50	5.990	3,270,617
Sour Lake	53	39	14	3,428	2,740,142
Goose Creek	117	66	51	29,432	7,288,716
Saratoga	39	22	17	1,203	616,110
San Antonio (Somerset)	38	34	4	527	94,100
Barbers Hill	22	14	8	3,520	169,415
Hull	66	39	27	50,355	1,476,405
Blue Ridge	2	1	1	600	24,910
Damon Mound	19	7	12	700	434,700
Dayton	...	.....	.....	.....	1,000
Orange Co.	...	.....	.....	.....	4,400
Nacogdoches	...	.....	.....	.....	95,000
Wildcats	313	116	197	9,235	89,475
Miscell'ous	...	.....	.....	.....	50,000
Totals, 1919	4,862	3,722	1,140	2,264,136	96,811,491

BY MONTHS

JANUARY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	141	130	11	52,145	3,660,695
Eastland County	29	21	8	1,015	553,135
Desdemona	8	6	2	95	261,765
Corsicana	..	..	..	....	31,095
Strawn	..	..	..	....	29,510
Brown County	..	..	..	....	9,395
Moran	..	..	..	....	4,400
Thrall	..	..	..	....	9,485

Herewith we present to our readers statistics covering 1921 in detail, and covering the history of petroleum back to its pioneer days. It has been a large task, but its reward comes in the feeling that herewith we give our readers the most complete compilation of petroleum figures ever offered—and, we venture to assert, the most accurate.

To the man who asks some question concerning petroleum production, or some question regarding refinery output, and who finds his answer already worked out for him in this Statistical Section, the real work necessary to answer that question in tabular form, is not at first apparent. The tabulation of statistics represents not only a long period of investigation, of checking up and rechecking figures, but tedious hours of thought in arranging these figures to give the greatest information with the least effort on the part of the reader.

It is, therefore, with pleasure that The OIL WEEKLY would commend to you the work of one of its staff men who, above all others, has labored to make this Statistical Section complete, W. E. Green, associate editor of The OIL WEEKLY.—The Editor.

JANUARY—Continued

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Coleman County	1	1	..	10	9,340
Burkburnett	75	46	29	1,780	1,812,010
Electra	25	13	12	815	333,405
Young County	3	3	..	1,195	71,655
K. M. A.	33	15	18	750	134,290
Holliday-Archer Co.	3	..	3	....	4,710
Iowa Park	15	12	3	105	17,610
Petrolia	1	..	1	....	11,060
Spindle Top	2	1	1	5	28,830
Markham	..	..	..	....	21,080
Batson	7	6	1	365	50,095
West Columbia	16	12	4	19,920	1,150,340
Humble	2	2	..	15	284,920
Sour Lake	5	4	1	70	160,735
Goose Creek	10	8	2	735	447,175
Saratoga	11	11	..	630	103,975
San Anto.-(Somerset)	10	10	..	80	36,270
Barbers Hill	2	..	2	....	8,835
Hull	18	15	3	42,050	824,755
Blue Ridge	10	4	6	2,700	42,160
Damon Mound	3	1	2	25	182,280
Dayton	..	..	..	....	1,955
Orange County	2	1	1	150	1,025
Nacogdoches	..	..	..	....	9,300
Wildcats	31	7	24	965	2,000
Totals 1921	463	329	134	125,620	10,309,290

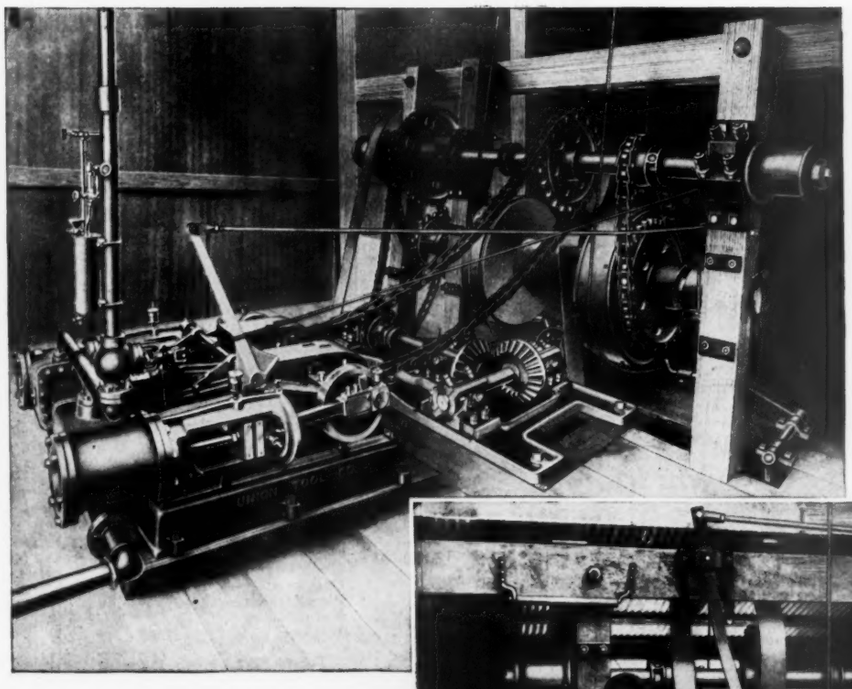
FEBRUARY

Stephens County	109	96	13	27,765	2,999,305
Eastland County	18	14	4	3,505	448,895
Desdemona	3	3	..	25	206,610
Corsicana	..	..	..	....	28,070
Strawn	..	..	..	....	28,560
Brown County	1	1	..	gas	8,290
Moran	..	..	..	....	3,990
Thrall	..	..	..	....	8,680
Coleman County	..	..	..	....	4,480
Burkburnett	62	42	20	2,000	1,617,950
Electra	36	31	5	780	305,590
Young County	22	19	3	4,765	106,210
K. M. A.	19	11	8	780	105,535
Holliday-Archer Co.	1	..	1	....	4,870
Iowa Park	44	32	12	460	15,650
Petrolia	..	..	..	....	9,835
Spindle Top	4	1	3	100	25,550
Markham	2	..	2	....	15,400
Batson	3	3	..	80	48,440
West Columbia	10	6	4	7,600	816,025
Humble	..	..	..	....	226,240
Sour Lake	1	1	..	30	144,895
Goose Creek	14	13	1	11,565	506,555
Saratoga	8	7	1	295	99,750
San Anto. (Somerset)	5	5	..	75	26,250
Barbers Hill	..	..	..	....	7,700
Hull	11	9	2	23,210	1,011,115
Blue Ridge	5	4	1	2,690	54,045
Damon Mound	1	1	..	2,000	134,225
Dayton	..	..	..	....	1,400
Orange County	2	2	..	200	2,905
Pierce Junction	..	..	..	....	.....
Nacogdoches	..	..	..	....	8,400
Wildcats	39	13	26	850	2,000
Totals 1921	420	314	106	88,775	9,033,415

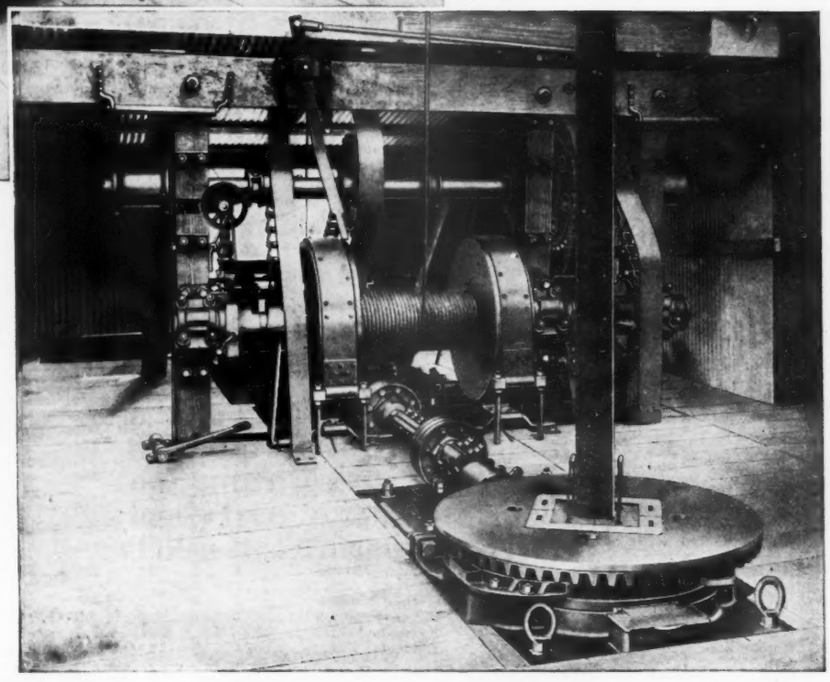
MARCH

Stephens County	124	111	13	39,950	3,270,935
Eastland County	32	25	7	6,210	576,290
Desdemona	10	7	3	1,110	243,660
Mexia	1	..	1	....	.....
Corsicana	..	..	..	....	31,185
Strawn	..	..	..	....	23,035
Brown County	2	2	..	25	7,440
Moran	..	..	..	....	5,085
Thrall	..	..	..	....	9,610
Coleman County	3	..	3	....	10,385
Burkburnett	27	21	6	995	1,862,325
Electra	14	11	3	555	346,580
Young County	9	8	1	1,575	232,640
K. M. A.	7	5	2	365	128,370
Holliday- Archer Co.	2	..	2	....	5,830
Iowa Park	..	..	..	....	17,670
Petrolia	..	..	..	....	12,600
Spindle Top	1	1	..	60	30,535
Markham	..	..	..	....	10,850
Batson	3	3	..	40	48,435
West Columbia	11	10	1	34,105	755,275
Humble	1	1	..	50	220,875
Sour Lake	..	..	..	....	156,425
Goose Creek	8	6	2	375	554,930
Saratoga	3	2	1	55	108,110
San Anto. (Somerset)	5	5	..	115	29,060
Barbers Hill	..	..	..	....	2,325
Hull	10	10	..	22,400	1,186,710
Blue Ridge	6	4	2	2,800	64,170
Damon Mound	..	..	..	....	144,150
Dayton	..	..	..	....	1,550
Orange County	2	1	1	130	4,725
Pierce Junction	1	1	..	gas	.....
Nacogdoches	..	..	..	....	9,200
Wildcats	50	9	41	385	2,000
Totals 1921	332	243	89	111,300	10,112,965

Union Tool Company's "Ideal" Product



View at left shows the relative positions of shaft drive attachment with draw works and twin cylinder drilling engine.



View of derrick floor showing shaft drive attachment coupled to rotary machine with universal jointed shaft. Note the clear, unobstructed floor space resulting from the absence of the rotary drive chain.

THE No. 5 "Ideal" Shaft Driven Rotary shown above is recommended for wells 3,000 feet and deeper. The No. 3 "Ideal" Rotary is built for depths of 2,000 to 3,000 feet, while the No. 2 "Ideal" Rotary is made for depths of less than 2,000 feet.

Complete stocks of Ideal Rotary Equipment are carried at all stores in the rotary districts.

THE NATIONAL SUPPLY COMPANIES

APRIL

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	103	94	9	34,965	3,070,890
Eastland County	16	10	6	1,600	549,510
Desdemona	10	4	6	345	227,340
Mexia	2	2	..	450	.....
Corsicana	..	..	..	....	26,700
Strawn	..	..	..	....	21,420
Brown County	..	..	..	....	6,300
Moran	..	..	..	....	4,860
Thrall	..	..	..	....	6,570
Coleman County	..	..	..	....	7,050
Burkburnett	37	23	14	1,060	1,745,520
Electra	14	9	5	335	344,700
Young County	16	15	1	4,810	259,000
K. M. A.	16	5	11	335	130,470
Holliday-Archer Co.	4	2	2	425	5,940
Iowa Park	..	..	..	....	17,100
Petrolia	..	..	..	....	12,900
Spindle Top	1	1	..	60	29,850
Markham	4	..	4	....	7,950
Batson	..	..	..	....	46,770
West Columbia	8	6	2	22,250	1,061,370
Humble	2	1	1	30	253,590
Sour Lake	1	..	1	....	153,960
Goose Creek	15	14	1	13,740	466,530
Saratoga	2	2	..	155	94,950
San Anto-(Somerset)	14	14	..	175	45,000
Barbers Hill	..	..	..	....	2,250
Hull	8	7	1	7,375	910,770
Blue Ridge	4	1	3	100	43,110
Damon Mound	2	1	1	500	122,400
Dayton	..	..	..	....	1,500
Orange County	..	..	..	....	2,850
Nacogdoches	..	..	..	....	9,000
Wildcats	22	2	20	20*	2,000
Totals 1921	301	213	88	88,730	9,690,120

*And gas.

MAY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	76	63	13	24,515	3,014,470
Eastland County	22	11	11	375	536,205
Desdemona	6	2	4	225	225,060
Corsicana	..	..	..	....	24,615
Strawn	..	..	..	....	19,685
Brown County	1	1	..	200	10,260
Moran	..	..	..	....	3,720
Thrall	..	..	..	....	6,695
Coleman County	1	1	..	20	6,975
Burkburnett	31	19	12	665	1,665,195
Electra	31	20	11	1,105	376,535
Young County	18	16	2	3,430	267,865
K. M. A.	4	1	3	35	117,240
Holliday-Archer Co.	5	4	1	1,520	18,135
Iowa Park	..	..	..	....	17,670
Petrolia	..	..	..	....	12,245
Spindle Top	2	1	1	10	27,310
Markham	..	..	..	....	7,160
Batson	..	..	..	....	48,435
West Columbia	10	8	2	17,860	1,063,330
Humble	4	4	..	2,410	335,360
Sour Lake	..	..	..	....	161,975
Goose Creek	8	7	1	1,110	604,810
Saratoga	..	..	..	....	38,350
San Anto.(Somerset)	6	6	..	50	43,010
Barbers Hill	..	..	..	....	2,325
Hull	4	3	1	1,300	806,340
Blue Ridge	2	2	..	2,600	72,850
Damon Mound	2	1	1	6,000	136,215
Dayton	..	..	..	....	1,550
Orange ounty	3	3	..	1,950	30,060
Pierce Junction	..	..	..	....	3,100
Nacogdoches	..	..	..	....	9,300
Wildcats	12	1	11	150	2,000
Totals 1921	248	174	74	65,530	9,711,050

JUNE

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	106	86	20	25,830	2,884,020
Eastland County	20	14	6	2,450	525,420
Desdemona	8	4	4	350	216,360
Mexia	1	1	..	3,500	.....
Corsicana	..	..	..	....	23,250
Strawn	..	..	..	....	20,970
Brown County	1	..	1	....	9,450
Moran	..	..	..	....	4,050
Thrall	..	..	..	....	6,360
Coleman County	1	1	..	10	4,650
Burkburnett	14	13	1	615	1,566,180
Electra	16	11	5	340	375,960
Young County	25	18	7	2,980	259,860
K. M. A.	4	3	1	250	104,220
Holliday-Archer Co.	3	..	3	....	28,700
Iowa Park	..	..	..	....	17,730
Petrolia	..	..	..	....	11,820
Spindle Top	1	..	1	....	23,700
Markham	..	..	..	....	4,875
Batson	1	..	1	....	43,385
West Columbia	11	10	1	17,680	1,055,735
Humble	..	..	..	....	328,230
Sour Lake	..	..	..	....	154,575
Goose Creek	2	2	..	520	518,625
Saratoga	3	1	2	25	80,250
San Anto.(Somerset)	7	7	..	125	37,310
Barbers Hill	..	..	..	....	2,250
Hull	7	6	1	5,175	716,210
Blue Ridge	1	1	..	2,500	46,200
Damon Mound	1	..	1	....	147,375
Dayton	..	..	..	....	1,500
Orange County	..	..	..	....	13,500

JUNE—Continued

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Pierce Junction	..	..	..	....	3,000
Nacogdoches	..	..	..	....	9,000
Wildcats	18	4	14	350*	2,000
Totals 1921	251	182	69	62,700	9,246,725

*And gas.

JULY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	91	70	21	26,900	2,548,605
Eastland County	19	7	12	1,015	478,175
Desdemona	..	..	..	....	201,005
Mexia	1	..	1	....	.....
Corsicana	..	..	..	....	22,940
Strawn	..	..	..	....	20,710
Brown County	..	..	..	....	9,830
Moran	..	..	..	....	4,185
Thrall	..	..	..	....	4,185
Coleman County	..	..	..	....	4,435
Burkburnett	16	10	6	370	1,591,880
Electra	16	9	7	385	374,540
Young County	27	18	9	3,375	282,500
K. M. A.	3	3	..	185	87,610
Holliday-Archer Co.	12	5	7	1,500	49,415
Iowa Park	..	..	..	....	20,460
Petrolia	..	..	..	....	11,410
Spindle Top	1	..	1	....	26,785
Markham	..	..	..	....	3,100
Batson	..	..	..	....	33,140
West Columbia	7	6	1	12,500	1,139,375
Humble	2	1	1	500	205,995
Sour Lake	..	..	..	....	149,080
Goose Creek	2	2	..	750	378,080
Saratoga	..	..	..	....	75,145
San Anto.(Somerset)	4	4	..	25	27,900
Barbers Hill	..	..	..	....	1,550
Hull	4	2	2	400	625,830
Blue Ridge	..	..	..	....	23,560
Damon Mound	1	..	1	....	89,590
Dayton	..	..	..	....	1,550
Orange County	1	1	..	350	11,785
Pierce Junction	1	1	..	3,500	23,835
Nacogdoches	..	..	..	....	9,300
Wildcats	14	7	7	1,035	2,000
Totals 1921	222	146	76	52,790	8,538,985

AUGUST

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	49	43	6	6,545	2,350,295
Eastland County	15	11	4	630	467,520
Desdemona	..	..	..	....	202,275
Mexia	1	..	1	....	.....
Corsicana	..	..	..	....	23,095
Strawn	..	..	..	....	20,120
Brown County	..	..	..	....	11,470
Moran	..	..	..	....	4,100
Thrall	..	..	..	....	4,495
Coleman County	2	1	1	15	4,840
Burkburnett	27	15	12	370	1,492,260
Electra	22	10	12	785	366,700
Young County	16	14	2	2,540	310,000
K. M. A.	5	4	1	135	92,225
Holliday-Archer Co.	16	10	6	2,200	54,270
Iowa Park	..	..	..	....	20,460
Petrolia	..	..	..	....	11,470
Spindle Top	2	..	2	....	27,510
Markham	..	..	..	....	3,680
Batson	..	..	..	....	39,410
West Columbia	5	2	3	5,000	1,255,500
Humble	2	1	1	250	282,535
Sour Lake	..	..	..	....	144,120
Goose Creek	3	3	..	380	429,815
Saratoga	..	..	..	....	73,160
San Antonio	5	5	..	55	40,300
Barbers Hill	..	..	..	....	1,550
Hull	..	..	..	....	578,180
Blue Ridge	..	..	..	....	27,310
Damon Mound	4	2	2	195	71,115
Dayton	..	..	..	....	1,550
Orange County	2	2	..	800	31,775
Pierce Junction	1	1	..	6,000	101,185
Nacogdoches	..	..	..	....	8,525
Wildcats	23	5	18	10*	2,000
Totals 1921	200	129	71	25,910	9,040,765

*And gas.

SEPTEMBER

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	58	43	15	10,430	1,955,775
Eastland County	5	5	..	310	450,870
Desdemona	..	..	..	....	167,130
Mexia	2	2	..	30,000	24,000
Corsicana	..	..	..	....	22,350
Strawn	..	..	..	....	19,875
Brown County	2	..	2	....	11,340
Moran	..	..	..	....	4,000
Thrall	..	..	..	....	4,320
Coleman County	2	..	2	....	3,870
Burkburnett	12	2	10	130	1,369,125
Electra	11	8	3	700	344,970
Young County	13	10	3	1,575	260,000
K. M. A.	3	3	..	220	80,430
Holliday-Archer Co.	4	3	1	750	57,225
Iowa Park	..	..	..	....	19,800
Petrolia	..	..	..	....	10,500
Spindle Top	..	..	..	....	26,550
Markham	..	..	..	....	3,810
Batson	..	..	..	....	38,300
West Columbia	7	7	..	19,650	1,256,910
Humble	..	..	..	....	246,990
Sour Lake	..	..	..	....	138,540
Goose Creek	4	3	1	3,200	468,360

SEPTEMBER—Continued

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Saratoga	..	..	..	....	69,180
San Anto.(Somerset)	..	..	..	....	45,750
Barbers Hill	..	..	..	....	1,000
Hull	..	..	..	....	551,460
Blue Ridge	..	..	..	....	23,160
Damon Mound	1	1	..	1,000	68,910
Dayton	..	..	..	....	1,500
Orange County	1	1	..	200	30,510
Pierce Junction	..	..	..	....	290,250
Nacogdoches	..	..	..	....	7,980
Wildcats	19	9	10	45*	2,000
Totals 1921	144	97	47	68,210	8,076,740

*And gas.

OCTOBER

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	50	13	37	9,235	1,829,805
Eastland County	7	1	6	505	457,405
Desdemona	..	..	..	....	167,130
Mexia	13	9	4	31,685	300,000
Corsicana	..	..	..	....	24,025
Strawn	..	..	..	....	18,500
Brown County	..	..	..	....	12,495
Moran	..	..	..	....	4,030
Thrall	..	..	..	....	4,340
Coleman County	..	..	..	....	4,090
Burkburnett	20	9	11	745	1,351,820
Electra	7	4	3	790	350,640
Young County	13	12	1	2,950	250,000
K. M. A.	4	1	3	200	71,360
Holliday-Archer Co.	12	7	5	700	62,095
Iowa Park	..	..	..	....	20,305
Petrolia	..	..	..	....	9,550
Spindle Top	2	..	2	....	28,860
Markham	..	..	..	....	3,875
Batson	..	..	..	....	41,230
West Columbia	6	6	..	20,250	1,023,650
Humble	1	1	..	25	249,305
Sour Lake	..	..	..	....	144,430
Goose Creek	8	5	3	390	484,470
Saratoga	..	..	..	....	67,485
San Anto.(Somerset)	1	1	..	10	48,980
Hull	1	..	1	....	526,510
Blue Ridge	1	1	..	40	22,725
Damon Mound	..	..	..	....	82,400
Dayton	..	..	..	....	4,155
Orange County	1	1	..	6,000	73,875
Pierce Junction	4	4	..	11,200	259,160
Nacogdoches	..	..	..	....	7,780
Wildcats	20	12	8	165*	2,000
Totals 1921	171	87	84	84,890	8,008,480

*And gas.

NOVEMBER

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	27	15	12	7,185	1,649,025
Eastland County	5	4	1	290	426,825
Desdemona	..	..	..	....	174,630
Mexia	13	11	2	103,125	1,152,375
Corsicana	..	..	..	....	23,550
Strawn	..	..	..	....	22,920
Brown County	..	..	..	....	11,880
Moran	..	..	..	....	3,940
Thrall	..	..	..	....	4,200
Coleman County	..	..	..	....	3,190
Burkburnett	12	7	5	1,175	1,258,500
Electra	17	13	4	1,025	333,420
Young County	20	16	4	4,555	247,710
K. M. A.	4	4	..	250	75,790
Holliday-Archer Co.	4	1	3	350	75,790
Iowa Park	..	..	..	....	18,950
Petrolia	..	..	..	....	8,890
Spindle Top	..	..	..	....	17,080
Markham	1	..	1	....	3,750
Batson	..	..	..	....	37,200
West Columbia	6	4	2	4,450	1,034,475
Humble	1	..	1	....	234,185
Sour Lake	1	1	..	60	102,785
Goose Creek	..	..	..	....	398,960
Saratoga	..	..	..	....	61,985
San Anto.(Somerset)	3	3	..	105	49,500
Barbers Hill	1	1	..	1,000	1,500
Hull	3	2	1	400	488,060
Blue Ridge	2	..	2	....	21,225
Damon Mound	2	2	..	1,100	88,500
Dayton	..	..	..	....	6,000
Orange County	3	3	..	13,000	196,950
Pierce Junction	6	4	2	13,800	387,000
Nacogdoches	..	..	..	....	7,500
Wildcats	13	7	6	1,315*	2,000
Totals 1921	144	98	46	158,185	8,630,240

*And gas.

DECEMBER

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
Stephens County	30	24	6	12,760	1,803,890
Eastland County	11	10	1	1,030	417,170
Desdemona	1	..	1	....	161,915
Mexia	49	33	16	200,600	3,240,430
Corsicana	..	..	..	....	24,460
Strawn	..	..	..	....	16,740
Brown County	..	..	..	....	14,325
Moran	..	..	..	....	4,095
Thrall	..	..	..	....	4,340
Coleman County	..	..	..	....	2,885
Burkburnett	19	11	8	1,130	1,228,965
Electra	28	20	8	760	352,470
Young County	22	19	3	5,210	277,640
K. M. A.	2	2	..	45	66,155

(Continued on page 100)

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$1,400,000

TEXAS
By Counties

STEPHENS COUNTY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	141	130	11	52,145	3,660,695
February	109	96	13	27,765	2,999,305
March	124	111	13	35,950	3,270,935
April	103	94	9	34,965	3,070,890
May	76	63	13	24,515	3,014,470
June	106	86	20	25,830	2,884,020
July	91	70	21	26,900	2,548,605
August	49	43	6	6,545	2,350,295
September	58	43	15	10,430	1,955,775
October	50	13	37	9,235	1,829,805
November	27	15	12	7,185	1,649,025
December	30	24	6	12,760	1,803,890
Totals 1921	964	788	176	274,225	31,037,710
Year 1920	1346	1051	295	466,975	23,852,050

RANGER

January	29	21	8	1,015	553,135
February	18	14	4	3,505	448,895
March	32	25	7	6,210	576,290
April	16	10	6	1,600	549,510
May	22	11	11	375	536,205
June	20	14	6	2,450	525,420
July	19	7	12	1,015	478,175
August	15	11	4	630	467,520
September	5	5	..	310	450,870
October	7	1	6	505	457,405
November	5	4	1	290	426,825
December	11	10	1	1,030	417,170
Totals 1921	199	133	66	18,935	5,887,420
Year 1920	751	546	205	115,570	10,141,385

DESDEMONA

January	8	6	2	95	261,765
February	3	3	..	25	206,610
March	10	7	3	1,710	243,660
April	10	4	6	345	227,340
May	6	2	4	225	225,060
June	8	4	4	350	216,360
July	..	..	..	.....	201,005
August	..	..	..	.....	202,275
September	..	..	..	.....	167,130
October	..	..	..	.....	179,365
November	..	..	..	.....	174,630
December	1	..	1	.....	161,915
Totals 1921	46	26	20	2,150	2,467,115
Year 1920	845	561	284	50,720	5,097,745

STRAWN

January	..	..	..	.....	29,510
February	..	..	..	.....	28,560
March	..	..	..	.....	23,035
April	..	..	..	.....	21,420
May	..	..	..	.....	19,685
June	..	..	..	.....	20,970
July	..	..	..	.....	20,710
August	..	..	..	.....	20,120
September	..	..	..	.....	19,875
October	..	..	..	.....	18,150
November	..	..	..	.....	22,920
December	..	..	..	.....	16,740
Totals 1921	..	..	..	.....	262,055
Year 1920	..	..	..	.....	512,760

CORSICANA

January	..	..	..	.....	31,095
February	..	..	..	.....	28,070
March	..	..	..	.....	31,185
April	..	..	..	.....	26,700
May	..	..	..	.....	24,615
June	..	..	..	.....	23,250
July	..	..	..	.....	22,940
August	..	..	..	.....	23,095
September	..	..	..	.....	22,350
October	..	..	..	.....	24,025
November	..	..	..	.....	23,550
December	..	..	..	.....	24,460
Totals, 1921	..	..	..	....	305,335
Year 1920	..	..	..	....	530,000

DECEMBER—Continued

Holliday-Archer Co.	7	4	3	525	55,275
Iowa Park	1	1	..	15	20,615
Petrolia	..	..	..	....	10,015
Spindle Top	..	..	..	....	28,520
Markham	..	..	..	....	3,875
Batson	..	..	..	....	41,385
West Columbia	..	..	..	....	961,465
Humble	1	1	..	50	230,270
Sour Lake	1	1	..	5	138,105
Goose Creek	1	..	1	....	388,710
Saratoga	3	2	1	90	64,355
San Antonio	1	1	..	10	53,010
Barbers Hill	..	..	..	....	18,600
Hull	1	1	..	1,000	492,030
Blue Ridge	..	..	..	....	20,520
Damon Mound	..	..	..	....	86,800
Dayton	..	..	..	....	6,200
Orange County	10	10	..	35,600	305,410
Pierce Junction	4	2	2	9,500	336,410
Nacogdoches	..	..	..	....	7,750
Wildcats	23	12	11	215*	2,000
Totals 1921	215	154	61	268,545	10,886,800

*And gas.

BROWN COUNTY

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	..	..	..	.....	9,395
February	1	1	..	gas	8,290
March	2	2	..	25	7,440
April	..	..	..	.....	6,300
May	1	1	..	200	10,260
June	1	..	1	.....	9,450
July	..	..	..	.....	9,830
August	..	..	..	.....	11,470
September	2	..	2	.....	11,340
October	..	..	..	.....	12,495
November	..	..	..	.....	11,880
December	..	..	..	.....	14,325
Totals, 1921	7	4	3	225	122,475
Year 1920	4	3	1	85	114,665

THRALL

January	..	..	..	.....	9,485
February	..	..	..	.....	8,680
March	..	..	..	.....	9,610
April	..	..	..	....	6,570
May	..	..	..	....	6,695
June	..	..	..	.....	6,360
July	..	..	..	.....	4,185
August	..	..	..	.....	4,495
September	..	..	..	....	4,320
October	..	..	..	....	4,340
November	..	..	..	.....	4,200
December	..	..	..	.....	4,340
Totals 1921	..	..	..	.....	73,280
Year 1920	..	..	..	.....	8,000

COLEMAN COUNTY

January	1	1	..	10	9,340
February	..	..	..	.....	4,480
March	3	..	3	.....	10,385
April	..	..	..	....	7,050
May	1	1	..	20	6,975
June	1	1	..	10	4,650
July	..	..	..	.....	4,435
August	2	1	1	15	4,840
September	2	..	2	.....	3,870
October	..	..	..	.....	4,090
November	..	..	..	....	3,190
December	..	..	..	....	2,885
Totals 1921	10	4	6	55	66,190
Year 1920	15	11	4	205	83,785

MORAN

January	..	..	..	.....	4,400
February	..	..	..	.....	3,990
March	..	..	..	.....	5,085
April	..	..	..	.....	4,860
May	..	..	..	.....	3,720
June	..	..	..	.....	4,050
July	..	..	..	.....	4,185
August	..	..	..	.....	4,100
September	..	..	..	.....	4,000
October	..	..	..	....	4,030
November	..	..	..	....	3,940
December	..	..	..	.....	4,095
Totals 1921	..	..	..	....	50,455
Year 1920	..	..	..	.....	48,575

MEXIA

January	..	..	..	.....	.....
February	..	..	..	.....	.....
March	1	..	1	.....	.....
April	2	2	..	450	.....
May	..	..	..	.....	.....
June	1	1	..	3,500	.....
July	1	..	1	.....	.....
August	1	..	1	.....	.....
September	2	2	..	30,000	24,000
October	13	9	4	31,685	300,000
November	13	11	2	103,125	1,152,375
December	49	33	16	200,600	3,240,430
Totals 1921	83	58	25	369,360	4,716,805

BURKBURNETT

January	75	46	29	1,780	1,812,010
February	62	42	20	2,000	1,617,950
March	27	21	6	995	1,862,325
April	37	23	14	1,060	1,745,520
May	31	19	12	665	1,665,195
June	14	13	1	615	1,566,180
July	16	10	6	370	1,591,880
August	27	15	12	370	1,492,260
September	12	2	10	130	1,369,125
October	20	9	11	745	1,351,820
November	12	7	5	1,475	1,388,500
December	19	11	8	1,130	1,228,965
Totals 1921	352	218	134	11,035	18,561,730
Year 1920	2,317	1,820	488	297,595	27,840,120

ELECTRA

January	25	13	12	815	333,405
February	36	31	5	780	305,590
March	14	11	3	555	346,580
April	14	9	5	335	344,700
May	31	20	11	1,105	376,535
June	16	11	5	340	375,960
July	16	9	7	385	374,540
August	22	10	12	785	366,700
September	11	8	3	760	344,970
October	7	4	3	790	350,640
November	17	13	4	1,[illegible]	352,420
December	28	20	8	760	352,470
Totals 1921	237	159	78	8,375	4,205,510
Year 1920	207	122	85	5,710	3,744,665

K-M-A

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	33	15	18	750	134,290
February	19	11	8	780	105,535
March	7	5	2	365	128,370
April	16	5	11	335	130,470
May	4	1	3	35	117,240
June	4	3	1	250	104,220
July	3	3	..	185	87,610
August	5	4	1	135	92,225
September	3	3	..	220	80,430
October	4	1	3	200	71,360
November	4	4	..	250	75,790
December	2	2	..	45	66,155
Totals 1921	104	57	47	3,550	1,193,695

IOWA PARK

January	15	12	3	105	17,610
February	44	32	12	460	15,650
March	..	..	..	.....	17,670
April	..	..	..	.....	17,100
May	..	..	..	.....	17,670
June	..	..	..	.....	17,730
July	..	..	..	.....	20,460
August	..	..	..	.....	20,460
September	..	..	..	.....	19,800
October	..	..	..	.....	20,305
November	..	..	..	.....	18,950
December	1	1	..	15	20,615
Totals	60	45	15	585	224,020

YOUNG COUNTY

January	3	3	..	1,195	71,655
February	22	19	3	4,765	106,210
March	9	8	1	1,575	232,640
April	16	15	1	4,810	259,000
May	18	16	2	3,430	262,865
June	25	18	7	2,980	259,860
July	27	18	9	3,375	282,500
August	16	14	2	2,540	310,000
September	13	10	3	1,575	260,000
October	13	12	1	2,950	250,000
November	20	16	4	4,555	247,710
December	22	19	3	5,210	277,640
Totals 1921	204	168	36	38,960	2,820,080
Year 1920	16	12	4	2,585	134,895

PETROLIA

January	1	..	1	.....	11,060
February	..	..	..	.....	9,835
March	..	..	..	.....	12,600
April	..	..	..	.....	12,900
May	..	..	..	.....	12,245
June	..	..	..	.....	11,820
July	..	..	..	.....	11,410
August	..	..	..	.....	11,470
September	..	..	..	.....	10,500
October	..	..	..	.....	9,550
November	..	..	..	.....	8,890
December	..	..	..	.....	10,015
Totals 1921	1	..	1	.....	132,295
Year 1920	9	3	6	35	135,385

HOLLIDAY-ARCHER COUNTY

January	3	..	3	.....	4,710
February	1	..	1	.....	4,870
March	2	..	2	.....	5,830
April	4	2	2	425	5,940
May	5	4	1	1,520	18,135
June	3	..	3	.....	28,700
July	12	5	7	1,500	49,415
August	16	10	6	2,200	54,220
September	4	3	1	750	57,225
October	12	7	5	700	62,095
November	4	1	3	350	75,790
December	7	4	3	525	55,275
Totals 1921	73	36	37	7,970	422,205
Year 1920	..	..	..	.....	49,850

SPINDLE TOP

January	2	1	1	5	28,830
February	4	1	3	100	25,550
March	1	1	..	60	30,535
April	1	1	..	60	29,850
May	2	1	1	10	27,310
June	1	..	1	...	23,700
July	1	..	1	...	26,785
August	2	..	2	...	27,510
September	..	..	..	...	26,550
October	2	..	2	...	28,860
November	..	..	..	...	17,080
December	..	..	..	...	28,520
Totals 1921	16	5	11	235	321,080
Year 1920	29	18	11	4,375	323,995

MARKHAM

January	..	..	..	...	21,080
February	2	..	2	...	15,400
March	..	..	..	...	10,850
April	4	..	4	...	7,950
May	..	..	..	...	7,160
June	..	..	..	...	4,875
July	..	..	..	...	3,100
August	..	..	..	...	3,680
September	..	..	..	...	3,810
October	..	..	..	...	3,875
November	1	..	1	...	3,750
December	..	..	..	...	3,875
Totals 1921	7	..	7	...	89,405
Year 1920	7	4	3	1,060	75,775

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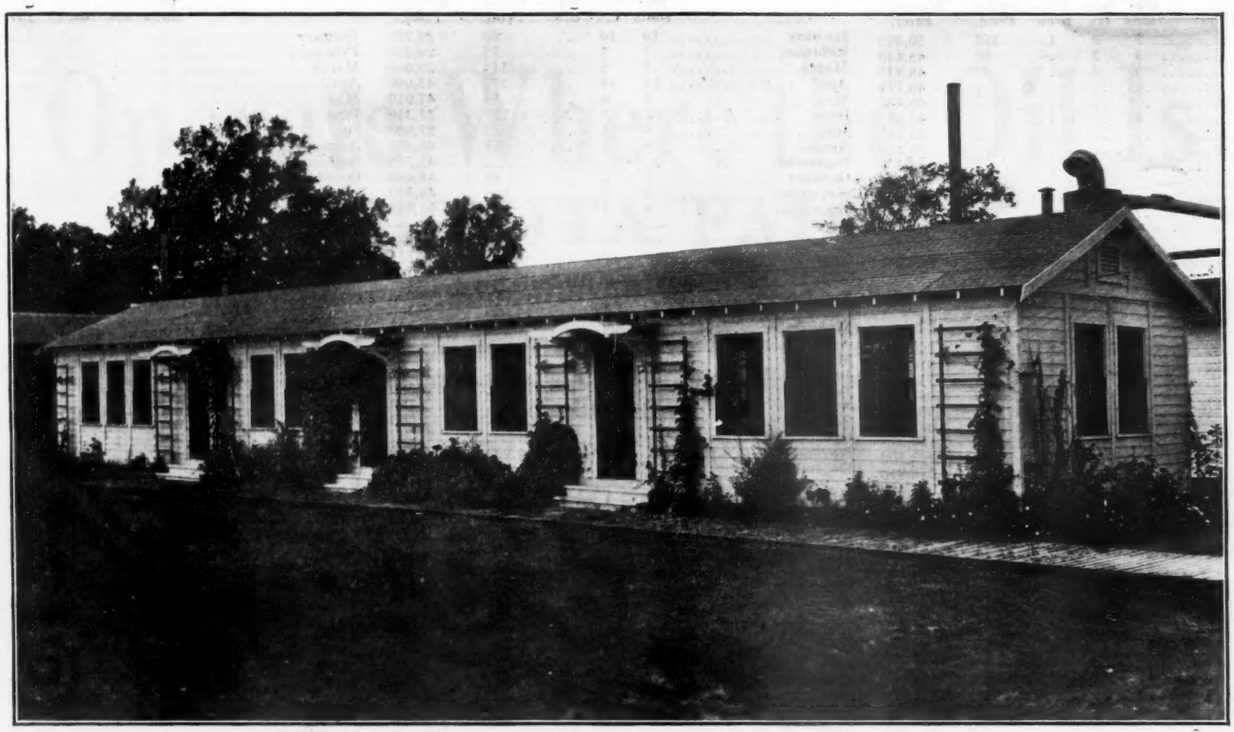

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BATSON

1921	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	7	6	1	365	50,095
February	3	3	..	80	48,440
March	3	3	..	40	48,435
April	..	..	..	...	46,770
May	..	..	..	...	48,435
June	1	..	1	...	43,385
July	..	..	..	...	33,140
August	..	..	..	...	39,410
September	..	..	..	...	38,300
October	..	..	..	...	41,230
November	..	..	..	...	37,200
December	..	..	..	...	41,385
Totals 1921	14	12	2	485	516,225
Year 1920	41	39	2	4,965	484,035

WEST COLUMBIA

January	16	12	4	19,920	1,150,340
February	10	6	4	7,600	816,025
March	11	10	1	34,105	755,275
April	8	6	2	22,250	1,061,370
May	10	8	2	17,860	1,063,330
June	11	10	1	17,680	1,055,735
July	7	6	1	12,500	1,139,375
August	5	2	3	5,000	1,255,500
September	7	7	..	19,650	1,256,910
October	6	6	..	20,250	1,023,650
November	6	4	2	4,450	1,034,475
December	..	..	..	.....	961,465
Totals 1921	97	77	20	181,265	12,573,450
Year 1920	95	92	23	241,150	10,563,755

HUMBLE

January	2	2	..	15	284,920
February	..	..	..	....	226,240
March	1	1	..	50	220,875
April	2	1	1	30	253,590
May	4	4	..	2,410	335,360
June	..	..	..	....	328,235
July	2	1	1	500	205,995
August	2	1	1	250	282,535
September	..	..	..	....	246,990
October	1	1	..	25	249,305
November	1	..	1	....	234,185
December	1	1	..	50	230,270
Totals 1921	16	12	4	3,330	3,098,500
Year 1920	74	57	17	22,040	3,692,115

SOUR LAKE

January	5	4	1	70	160,735
February	1	1	..	30	144,895
March	..	..	..	.....	156,425
April	1	..	1	.....	153,960
May	..	..	..	.....	161,975
June	..	..	..	.....	154,575
July	..	..	..	.....	149,080
August	..	..	..	.....	144,120
September	..	..	..	.....	138,540
October	..	..	..	.....	144,430
November	1	1	..	60	102,785
December	1	1	..	5	138,105
Totals 1921	9	7	2	165	1,749,625
Year 1920	42	35	7	3,805	2,073,485

GOOSE CREEK

January	10	8	2	735	447,175
February	14	13	1	11,565	506,555
March	8	6	2	375	554,930
April	15	14	1	13,740	466,530
May	8	7	1	1,110	604,810
June	2	2	..	520	518,625
July	2	2	..	750	378,080
August	3	3	..	380	429,815
September	4	3	1	3,200	468,360
October	8	5	3	390	484,470
November	..	..	..	.....	398,960
December	1	..	1	.....	388,710
Totals 1921	75	63	12	32,765	5,647,020
Year 1920	114	93	21	41,480	5,666,390

SARATOGA

January	11	11	..	630	103,975
February	8	7	1	295	99,750
March	3	2	1	55	108,110
April	2	2	..	155	94,950
May	..	..	..	.....	38,350
June	3	1	2	25	80,250
July	..	..	..	.....	75,145
August	..	..	..	.....	73,160
September	..	..	..	.....	69,180
October	..	..	..	.....	67,485
November	..	..	..	.....	61,985
December	3	2	1	90	64,355
Totals 1921	30	25	5	1,250	936,695
Year 1920	70	65	5	4,695	913,735

SAN ANTONIO (SOMERSET)

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	10	10	..	80	36,270
February	5	5	..	75	26,250
March	5	5	..	115	29,060
April	14	14	..	175	45,000
May	6	6	..	50	43,010
June	7	7	..	125	37,310
July	4	4	..	25	27,900
August	5	5	..	55	40,300
September	..	..	..	.....	45,750
October	1	1	..	10	48,980
November	3	3	..	105	49,500
December	1	1	..	10	53,010
Totals 1921	61	61	..	825	482,340
Year 1920	72	72	..	855	245,135

BARBERS HILL

January	2	..	2	.....	8,835
February	..	..	..	.....	7,700
March	..	..	..	.....	2,325
April	..	..	..	.....	2,250
May	..	..	..	.....	2,325
June	..	..	..	.....	2,250
July	..	..	..	.....	1,550
August	..	..	..	.....	1,550
September	..	..	..	.....	1,000
October	..	..	..	.....	.....
November	1	1	..	1,000	1,500
December	..	..	..	.....	18,600
Totals 1921	3	1	2	1,000	49,885
Year 1920	16	5	11	805	136,375

HULL

January	18	15	3	42,050	824,755
February	11	9	2	23,210	1,011,115
March	10	10	..	22,400	1,186,710
April	8	7	1	7,375	910,770
May	4	3	1	1,300	806,340
June	7	6	1	5,175	716,210
July	4	2	2	400	625,830
August	..	..	..	.....	578,180
September	..	..	..	.....	551,460
October	1	..	1	.....	526,510
November	3	2	1	400	488,060
December	1	1	..	1,000	492,030
Totals 1921	67	55	12	103,310	8,717,970
Year 1920	148	119	29	95,940	4,468,615

BLUE RIDGE

January	10	4	6	2,700	42,160
February	5	4	1	2,690	54,045
March	6	4	2	2,800	64,170
April	4	1	3	100	43,110
May	2	2	..	2,600	72,850
June	1	1	..	2,500	46,200
July	..	..	..	.....	23,560
August	..	..	..	.....	27,310
September	..	..	..	.....	23,160
October	1	1	..	40	22,725
November	2	..	2	.....	21,225
December	..	..	..	.....	20,520
Totals 1921	31	17	14	13,430	461,035
Year 1920	15	9	6	8,530	173,085

DAMON MOUND

January	3	1	2	25	182,280
February	1	1	..	2,000	134,225
March	..	..	..	.....	144,150
April	2	1	1	500	122,400
May	2	1	1	6,000	136,215
June	1	..	1	.....	147,375
July	1	..	1	.....	89,590
August	4	2	2	195	71,115
September	1	1	..	1,000	68,910
October	..	..	..	.....	82,400
November	2	2	..	1,100	88,500
December	..	..	..	.....	86,800
Totals 1921	17	9	8	10,820	1,353,960
Year 1920	27	18	9	18,735	1,259,375

DAYTON

January	..	..	..	.....	1,955
February	..	..	..	.....	1,400
March	..	..	..	.....	1,550
April	..	..	..	.....	1,500
May	..	..	..	.....	1,550
June	..	..	..	.....	1,500
July	..	..	..	.....	1,550
August	..	..	..	.....	1,550
September	..	..	..	.....	1,500
October	..	..	..	.....	4,155
November	..	..	..	.....	6,000
December	..	..	..	.....	6,200
Totals 1921	..	..	..	.....	30,410
Year 1920	..	..	..	.....	1,000

ORANGE COUNTY

January	2	1	1	150	1,025
February	2	2	..	200	2,905
March	2	1	1	130	4,725
April	..	..	..	.....	2,850
May	3	3	..	1,950	30,060
June	..	..	..	.....	13,500
July	1	1	..	350	11,285
August	2	2	..	800	31,775
September	1	1	..	200	30,510
October	1	1	..	6,000	73,875
November	3	3	..	13,000	196,950
December	10	10	..	35,600	305,410
Totals 1921	27	25	2	58,380	704,870
Year 1920	..	..	..	.....	4,000

NACOGDOCHES

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	..	..	..	.....	9,300
February	..	..	..	.....	8,400
March	..	..	..	.....	9,200
April	..	..	..	.....	9,000
May	..	..	..	.....	9,300
June	..	..	..	.....	9,000
July	..	..	..	.....	9,300
August	..	..	..	.....	8,525
September	..	..	..	.....	7,980
October	..	..	..	.....	7,780
November	..	..	..	.....	7,500
December	..	..	..	.....	7,750
Totals 1921	..	..	..	.....	103,035
Year 1920	..	..	..	.....	75,000

PIERCE JUNCTION

January	..	..	..	.....	.....
February	..	..	..	.....	.....
March	1	1	..	gas	.....
April	..	..	..	.....	.....
May	..	..	..	.....	3,100
June	..	..	..	.....	3,000
July	1	1	..	3,500	23,835
August	1	1	..	6,000	101,185
September	..	..	..	.....	290,250
October	4	4	..	11,200	259,160
November	6	4	2	13,800	387,000
December	4	2	2	9,500	336,410
Totals 1921	17	13	4	44,000	1,403,940

TEXAS WILDCATS

January	31	7	24	965	.....
February	39	13	26	850	.....
March	50	9	41	385	.....
April	22	2	20	20*	.....
May	12	1	11	150	.....
June	18	4	14	350*	.....
July	14	7	7	1,035	.....
August	23	5	18	10*	.....
September	19	9	10	45*	.....
October	20	12	8	165*	.....
November	13	7	6	1,315*	.....
December	23	12	11	215*	.....
Totals 1921	284	88	196	5,505*	110,000
Year 1920	400	119	281	9,740*	75,000

*And gas.

1920

STEPHENS COUNTY FIELD

January	53	44	9	12,800	1,119,000
February	72	60	12	26,500	1,001,220
March	64	53	11	21,800	954,645
April	72	58	14	14,100	992,700
May	123	97	26	50,910	1,245,890
June	77	60	17	25,500	1,605,600
July	152	115	37	38,805	1,956,940
August	148	95	53	44,160	2,411,615
September	121	92	29	33,020	2,422,230
October	170	132	38	87,335	3,011,225
November	179	142	37	68,945	3,583,470
December	115	103	12	43,100	3,547,515
Totals, 1920	1,346	1,051	295	466,975	23,852,050
Year 1919	338	290	48	233,567	10,514,216

RANGER FIELD

January	98	86	12	28,850	1,585,550
February	74	57	17	12,400	1,321,675
March	68	57	11	9,857	1,137,610
April	87	73	14	14,160	947,700
May	86	73	13	20,920	900,700
June	51	32	19	6,488	899,190
July	50	39	11	7,490	781,915
August	53	20	33	4,850	549,250
September	45	29	16	2,110	482,190
October	70	42	28	2,990	500,680
November	48	25	23	4,565	525,840
December	21	13	8	890	509,085
Totals 1920	751	546	205	115,570	10,141,385
Year 1919	609	522	87	439,092	22,379,665

DESDEMONA FIELD

January	76	64	12	12,260	608,950
February	112	80	32	11,700	527,800
March	82	68	14	4,250	426,625
April	95	77	18	4,385	501,160
May	87	57	30	7,695	437,380
June	82	37	45	1,695	435,600
July	83	47	36	3,730	477,015
August	69	42	27	1,205	379,070
September	48	33	15	1,180	365,250
October	45	18	27	540	326,070
November	20	9	11	1,030	314,340
December	46	29	17	1,050	298,485
Totals 1920	845	561	284	50,720	5,097,745
Year 1919*	501	440	61	231,540	7,375,823

*—10 Months.

Operate Where the Oil Is

WICHITA FALLS

"The City That Faith Built"

in the midst of the great oil fields of Northwestern Texas and Southern Oklahoma is the logical

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for the oil fields of Wichita, Archer, Young, Stephens and Eastland Counties and for the important developments in the Panhandle of Texas and Southern Oklahoma.

The Gulf Production Company
The Texas Company
The Texhoma Oil & Refining Company
The Sinclair Oil Company
The American Refining Company
The Humble Oil Company
The Prairie Oil Company
The Kansas & Gulf Company
The Panhandle Oil & Refining Co.
The Sunshine State Oil & Refining Co.

and many other substantial companies have decided they can operate most efficiently from Wichita Falls as headquarters.

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Wichita Falls is the best place from which to cover these producing territories.

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It is a well built, well governed, clean, pleasing, progressive city of 40,000 loyal, enterprising people, running 93% native born white Americans.

WICHITA FALLS CHAMBER OF COMMERCE
Wichita Falls, Texas

BROWN COUNTY FIELD

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	..	...	...	.....	8,680
February	..	...	...	.....	7,250
March	..	...	...	.....	9,300
April	..	...	...	.....	8,500
May	..	...	...	.....	9,000
June	..	...	...	.....	9,000
July	..	...	...	.....	10,850
August	1	1	...	gas	8,990
September	1	...	1	.....	8,700
October	1	1	...	10	9,175
November	..	...	...	75	12,540
December	..	...	...	.....	12,680
Totals 1920	4	3	1	85	114,665
Year 1919	18	5	13	565	213,526

COLEMAN COUNTY FIELD

January	..	...	...	.....	3,720
February	..	...	...	.....	2,460
March	..	...	...	.....	3,050
April	..	...	...	.....	2,500
May	..	...	...	.....	6,200
June	..	...	...	.....	15,000
July	3	2	1	50	8,000
August	6	6	...	105	6,095
September	4	2	2	35	9,390
October	2	1	1	15	9,190
November	..	...	...	.....	8,970
December	..	...	...	.....	9,210
Totals 1920	15	11	4	205	83,785
Year 1919	29	16	13	346	46,590

MORAN FIELD

January	..	...	...	.....	3,000
February	..	...	...	.....	2,465
March	..	...	...	.....	3,100
April	..	...	...	.....	4,500
May	..	...	...	.....	4,600
June	..	...	...	.....	3,600
July	..	...	...	.....	5,425
August	..	...	...	.....	4,960
September	..	...	...	.....	4,500
October	..	...	...	.....	4,495
November	..	...	...	.....	3,900
December	..	...	...	.....	4,030
Totals 1920	..	...	...	.....	48,575
Year 1919	..	...	...	.....	32,500

STRAWN FIELD

January	..	...	...	.....	15,190
February	..	...	...	.....	9,425
March	..	...	...	.....	28,100
April	..	...	...	.....	80,000
May	..	...	...	.....	62,000
June	..	...	...	.....	69,000
July	..	...	...	.....	51,960
August	..	...	...	.....	39,805
September	..	...	...	.....	38,970
October	..	...	...	.....	48,050
November	..	...	...	.....	35,340
December	..	...	...	.....	34,920
Totals 1920	..	...	...	.....	512,760
Year 1919	..	...	...	.....	101,300

BURKBURNETT FIELD

January	420	370	50	84,755	2,795,000
February	286	245	41	45,200	2,355,950
March	257	232	25	39,710	2,460,625
April	147	102	45	27,680	2,441,250
May	162	143	19	34,665	2,666,000
June	164	111	53	18,985	2,557,500
July	234	169	65	16,300	2,356,000
August	154	99	55	8,190	2,197,900
September	139	103	36	6,470	2,058,000
October	118	91	27	6,505	2,035,460
November	95	65	30	3,300	1,998,000
December	141	99	42	5,835	1,918,435
Totals 1920	2,317	1,809	488	297,595	27,840,120
Year 1919	1,989	1,720	269	1,093,522	25,865,757

ELECTRA FIELD

January	7	2	5	20	324,900
February	18	10	8	210	290,725
March	11	5	6	200	301,475
April	7	5	2	125	236,500
May	22	16	6	730	325,500
June	7	5	2	130	311,250
July	18	11	7	645	328,910
August	14	7	7	275	327,050
September	10	4	6	100	313,110
October	41	24	17	1,200	327,980
November	19	11	8	1,005	322,050
December	33	22	11	1,070	335,205
Totals 1920	207	122	85	5,710	3,744,665
Year 1919	122	106	16	4,836	4,177,171

IOWA PARK K-M-A FIELD

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	3	3	...	40	19,000
February	3	3	...	35	26,100
March	26	16	10	195	23,000
April	5	3	2	2,015	28,000
May	41	20	21	4,425	56,575
June	36	27	9	5,435	93,900
July	41	29	12	5,700	171,120
August	38	24	14	3,240	194,525
September	42	22	20	3,175	188,625
October	35	23	12	1,895	191,580
November	87	62	25	2,615	164,700
December	27	21	6	1,890	153,575
Totals 1920	384	253	131	30,660	1,310,700
Year 1919	184	101	83	2,823	177,950

HOLLIDAY FIELD

January	..	...	...	.....	1,200
February	..	...	...	.....	1,975
March	..	...	...	.....	1,500
April	..	...	...	.....	3,600
May	..	...	...	.....	6,975
June	..	...	...	.....	6,300
July	..	...	...	.....	5,270
August	..	...	...	.....	3,875
September	..	...	...	.....	4,200
October	..	...	...	.....	4,805
November	..	...	...	.....	5,250
December	..	...	...	.....	4,900
Totals 1920	..	...	...	.....	49,850
Year 1919	3	1	2	20	58,230

PETROLIA FIELD

January	..	...	...	.....	12,000
February	1	1	...	35	13,000
March	..	...	...	.....	13,000
April	..	...	...	.....	9,180
May	2	...	2	.....	13,020
June	1	...	1	.....	12,300
July	1	...	1	.....	10,850
August	..	...	...	.....	10,540
September	..	...	...	.....	9,960
October	4	2	2	gas	10,340
November	..	...	...	.....	10,500
December	..	...	...	.....	10,695
Totals 1920	9	3	6	35	135,385
Year 1919	26	17	9	375	212,624

YOUNG COUNTY FIELD

August	3	2	1	125	20,460
September	1	1	...	10	32,475
October	4	3	1	160	28,600
November	5	4	1	1,640	25,750
December	3	2	1	650	27,610
Totals 1920	16	12	4	2,585	*134,895

*—Production figures revised, raising original estimates.

WEST COLUMBIA FIELD

January	5	4	1	53,000	874,635
February	8	2	6	8,500	501,700
March	3	3	...	15,500	579,315
April	11	11	...	23,930	627,180
May	8	5	3	8,300	709,055
June	7	6	1	990	524,700
July	14	13	1	32,695	734,390
August	8	6	2	8,610	1,401,275
September	7	3	4	2,585	860,215
October	13	11	2	58,730	1,165,260
November	5	4	1	11,400	1,444,950
December	6	4	2	16,910	1,141,080
Totals 1920	95	72	23	241,150	10,563,755
Year 1919	108	61	47	150,975	8,128,809

GOOSE CREEK FIELD

January	10	7	3	1,120	455,640
February	7	4	3	285	414,030
March	5	2	3	65	391,530
April	8	4	4	270	432,300
May	10	8	2	3,350	418,655
June	6	5	1	4,205	451,110
July	11	10	1	5,210	515,810
August	7	7	...	6,250	470,575
September	13	12	1	5,385	502,525
October	12	11	1	2,675	510,260
November	18	16	2	9,725	591,525
December	7	7	...	2,940	512,430
Totals 1920	114	93	21	41,480	5,666,390
Year 1919	117	66	51	29,432	7,288,716

HULL FIELD

January	4	4	...	1,225	208,785
February	11	6	5	6,360	214,890
March	14	8	6	3,285	366,110
April	12	9	3	8,975	284,240
May	14	8	6	5,825	259,860
June	15	9	6	5,840	299,700
July	18	17	1	8,790	322,665
August	13	12	1	8,890	368,900
September	13	13	...	13,555	433,425
October	12	12	...	6,135	474,455
November	13	13	...	19,125	607,990
December	9	8	1	7,755	627,990
Totals 1920	148	119	29	95,940	4,468,615
Year 1919	66	39	27	50,355	1,476,405

HUMBLE FIELD

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	5	5	...	320	223,200
February	5	2	3	20	197,780
March	7	6	1	11,390	324,075
April	5	4	1	150	285,860
May	10	7	3	4,710	270,725
June	10	7	3	240	258,300
July	13	11	2	4,435	255,225
August	6	6	...	265	386,495
September	4	2	2	15	439,860
October	6	5	1	220	393,855
November	2	1	1	75	349,315
December	1	1	...	200	307,425
Totals 1920	74	57	17	22,040	3,692,115
Year 1919	121	71	50	5,990	3,270,617

SOUR LAKE FIELD

January	1	1	...	75	182,065
February	3	3	...	25	180,380
March	3	3	...	115	181,895
April	2	...	2	.....	157,080
May	4	3	1	1,340	174,220
June	7	5	2	165	177,000
July	2	2	...	50	177,785
August	3	3	...	105	179,800
September	3	2	1	35	176,625
October	6	6	...	605	171,645
November	6	6	...	1,125	158,100
December	2	1	1	165	156,890
Totals 1920	42	35	7	3,805	2,073,485
Year 1919	53	39	14	3,428	2,740,142

DAMON MOUND FIELD

January	3	1	2	100	31,000
February	5	2	3	5,100	29,000
March	4	2	2	1,060	36,035
April	4	3	1	375	132,000
May	3	3	...	400	121,600
June	..	...	...	.....	100,500
July	2	2	...	250	78,040
August	1	1	...	150	78,350
September	2	1	1	1,000	70,875
October	1	1	...	5,000	198,400
November	..	...	...	.....	176,400
December	2	2	...	5,300	207,175
Totals 1920	27	18	9	18,735	1,259,375
Year 1919	19	7	12	700	434,700

SARATOGA FIELD

January	2	2	...	85	54,250
February	1	...	1	.....	49,880
March	4	4	...	215	58,655
April	3	3	...	40	51,660
May	7	7	...	220	54,250
June	8	7	1	280	64,605
July	9	7	2	695	64,605
August	7	7	...	780	83,700
September	8	8	...	680	94,500
October	6	6	...	605	114,545
November	9	8	1	820	125,365
December	6	6	...	275	100,825
Totals 1920	70	65	5	4,695	913,735
Year 1919	39	22	17	1,203	616,110

BATSON FIELD

January	..	...	...	.....	35,650
February	..	...	...	.....	32,480
March	..	...	...	.....	38,160
April	1	1	...	5	37,200
May	5	3	2	90	39,060
June	6	6	...	45	36,000
July	5	5	...	425	44,660
August	3	3	...	115	48,050
September	6	6	...	70	45,000
October	7	7	...	150	35,340
November	4	4	...	90	45,935
December	4	4	...	3,975	46,500
Totals 1920	41	39	2	4,965	484,035
Year 1919	8	5	3	102	502,200

SPINDLE TOP FIELD

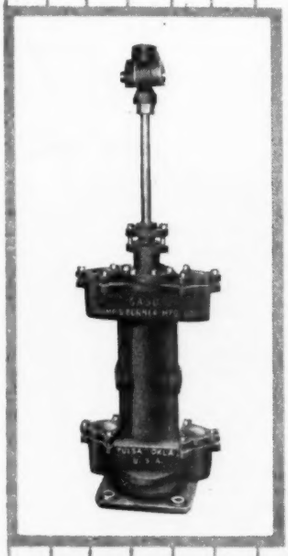
January	3	1	2	10	32,550
February	..	...	...	.....	24,650
March	2	1	1	10	25,420
April	3	1	2	50	25,500
May	2	...	2	.....	24,800
June	..	...	...	.....	23,700
July	3	2	1	40	25,925
August	1	1	...	15	25,950
September	4	4	...	100	27,000
October	1	1	...	50	28,210
November	6	4	2	100	29,660
December	4	3	1	4,000	30,630
Totals 1920	29	18	11	4,375	323,995
Year 1919	24	19	5	1,022	458,680

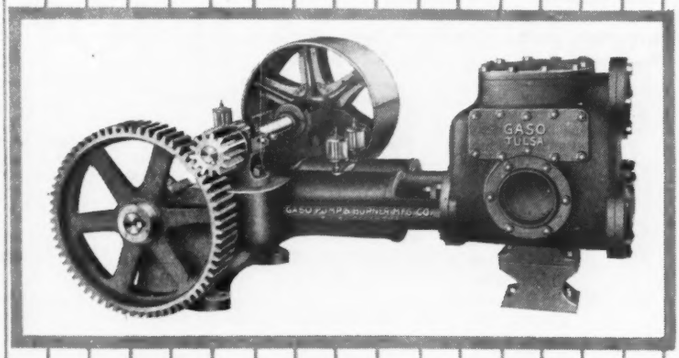
SOMERSET (S. A. DISTRICT) FIELD

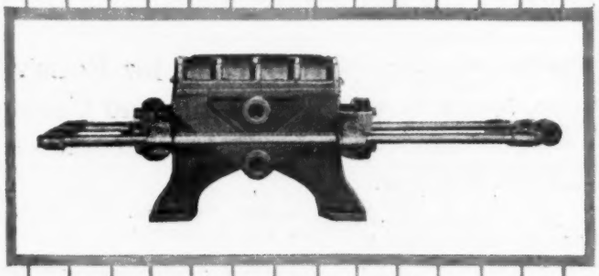
January	6	6	...	45	6,820
February	6	6	...	60	7,975
March	1	1	...	5	10,665
April	9	9	...	50	13,110
May	13	13	...	120	14,260
June	8	8	...	110	15,300
July	11	11	...	135	18,800
August	10	10	...	210	26,735
September	7	7	...	110	29,250

(Continued on page 106.)

GASO PRODUCTS *and Service*







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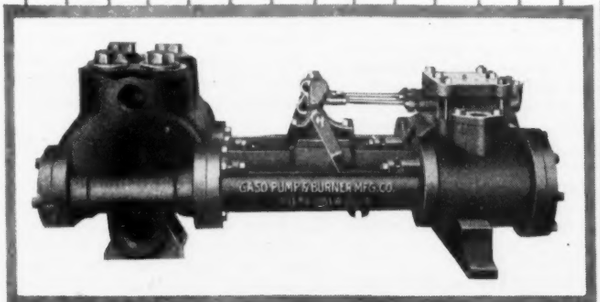

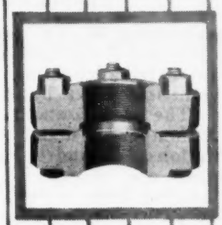

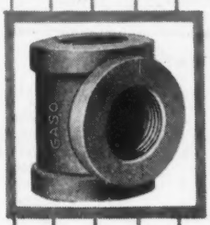

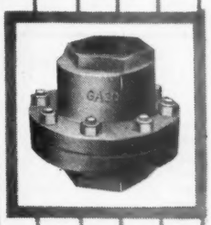

TABLE SHOWING U. S. PRODUCTION, CONSUMPTION, EXPORTS AND IMPORTS FOR 1920 AND 1921

(U. S. Geological Survey)

	Production		Consumption		Imports		Exports	
	1920	1921	1920	1921	1920	1921	1920	1921
January	33,774,000	38,271,000	40,685,000	48,375,000	6,294,000	13,192,900	429,000	735,650
February	32,723,000	35,348,000	37,892,000	38,726,000	4,940,000	11,384,000	797,000	769,000
March	35,831,000	40,965,000	42,434,000	45,243,000	6,503,000	12,300,000	862,000	700,000
April	35,583,000	40,061,000	41,594,000	42,527,000	6,186,000	10,043,925	649,000	742,900
May	36,503,000	42,043,000	42,857,000	41,527,000	6,966,000	9,147,415	703,000	865,345
June	36,946,000	40,412,000	41,759,000	42,797,000	8,120,000	10,205,255	576,000	586,140
July	38,203,000	40,328,000	43,381,000	41,533,000	6,768,000	8,046,860	686,000	537,960
August	39,055,000	40,966,000	47,148,000	45,595,000	10,791,000	3,352,230	533,000	884,815
September	37,532,000	36,615,000	48,458,000	41,700,000	11,650,000	9,100,000	736,000	900,000
October	39,592,000	35,621,000	48,174,000	41,204,000	11,361,000	11,575,410	749,000	746,630
November	38,699,000	37,780,000	48,895,000	46,511,000	13,750,000	12,993,765	635,000	864,225
December	38,961,000	*	47,909,000	*	12,846,000	*	690,000	*
Totals	443,402,000	†474,858,216	531,186,000	.....	106,175,000	.....	8,045,000	.....

*Government figures not available †December estimated.

	1920 Stocks of Domestic Petroleum				1921 Stocks of Domestic Petroleum			
On last day of month indicated	Pipe line and tank stocks (former method reporting)	Net pipe line and tank farm stocks	California	Stocks of Mexican petroleum held in the U. S. by importers	East of California net pipe line and tank farm stocks	California	Stocks of Mexican petroleum held in the U. S. by importers
January	98,911,000	.....	28,253,000	2,576,000	95,838,000	21,261,000	7,157,000
February	98,985,000	.....	27,354,000	2,375,000	100,147,000	21,566,000	9,171,000
March	99,375,000	.....	26,222,000	2,155,000	105,858,000	22,896,000	9,427,000
April	99,219,000	.....	25,772,000	2,287,000	110,745,000	23,974,000	10,297,000
May	99,436,000	.....	25,253,000	2,498,000	117,012,000	26,602,000	10,200,000
June	102,703,000	.....	24,060,000	3,155,000	122,985,000	28,354,000	9,709,000
July	105,051,000	.....	23,117,000	2,654,000	128,865,000	30,165,000	8,322,000
August	106,894,000	89,355,000	22,149,000	3,944,000	130,565,000	32,338,000	5,287,000
September	106,914,000	88,155,000	21,874,000	4,187,000	131,918,000	32,158,000	7,285,000
October	108,196,000	89,584,000	21,265,000	5,554,000	131,761,000	31,574,000	9,272,000
November	110,053,000	92,015,000	21,272,000	6,599,000	132,089,000	31,716,000	12,201,000
December	112,760,000	94,919,000	20,930,000	7,442,000	.....	.....	.....

Note—The above table shows revised figures of stocks for 1920 and 1921 as published in the statistics of petroleum issued monthly by the U. S. Geological Survey, under the supervision of G. B. Richardson. It will be noted that pipe line and tank farm stocks east of California for the months of January to July, 1920, are not directly comparable with those for succeeding months. Prior to August, 1920, the companies followed no uniform method of reporting stocks to the Geological Survey; some reported gross stocks, others net stocks, some included pipe line and tank farm stocks, producers and refiners stocks, and the reports differed in including oil in the pipe lines. To permit a comparison with the present system of recording stocks, whereby it is possible to record net and gross tank farm and pipe line stocks, the former practice of reporting stocks was continued through December, 1920, but has now been discontinued. Pipe line and tank farm stocks for the states east of California are reported by the companies monthly to the Geological Survey as gross stocks, including the total contents of tanks and pipe lines, and as net stocks which are gross stocks, minue b. s. and water. Stocks for California represent the average figures collected by the Standard Oil Company and the Independent Oil Producers Association.

SOMERSET—Continued

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
October	1	1	...	10	33,170
November	..	...	...	.....	33,000
December	..	...	...	.....	35,050
Totals 1920	72	72	...	855	245,135
Year 1919	38	34	4	527	94,100

BLUE RIDGE FIELD

January	1	...	1	.....	2,630
February	1	1	...	20	2,030
March	..	...	...	.....	2,170
April	2	...	2	.....	1,950
May	1	1	...	600	1,860
June	3	2	1	850	4,200
July	3	1	2	160	6,200
August	..	...	...	.....	3,720
September	..	...	...	.....	3,600
October	3	3	...	6,700	37,725
November	..	...	...	.....	68,250
December	1	1	...	200	38,750
Totals 1920	15	9	6	8,530	173,085
Year 1919	2	1	1	600	24,910

BARBERS HILL FIELD

January	1	...	1	.....	15,500
February	2	...	2	.....	9,790
March	..	...	...	.....	5,425
April	..	...	...	.....	6,000
May	2	1	1	200	9,300
June	1	1	...	100	11,250
July	5	2	3	55	11,990
August	2	...	2	.....	10,260
September	3	1	2	450	18,565
October	..	...	...	.....	17,205
November	..	...	...	.....	11,325
December	..	...	...	.....	9,765
Totals 1920	16	5	11	805	136,375
Year 1919	22	14	8	3,520	169,415

MARKHAM FIELD

January	..	...	...	.....	6,290
February	..	...	...	.....	4,350
March	1	...	1	.....	4,525
April	1	...	1	.....	4,500
May	..	...	...	.....	4,495
June	2	2	...	35	4,500
July	..	...	...	.....	6,200
August	1	1	...	25	6,350
September	..	...	...	.....	6,150
October	..	...	...	.....	6,200
November	..	...	...	.....	6,000
December	2	1	1	1,000	16,215
Totals 1920	7	4	3	1,060	75,775
Year 1919	12	10	2	361	53,260

Chicago, Ill., Jan. 17.—The new scale of prices put into effect by the American Can Company became operative, January 11, and were brought about through declines in the tin plate market. The reductions range from $4.80 to $17.85 per 1,000 cans as compared to the price scale promulgated in January, 1921.

Packer's can now are available in lists of 1,000, f. o. b. shipping point, as follows: No. 1 at $14.77, a reduction of $4.80; No. 2 at $20.42, a reduction of $7.02; No. 2½ at $26.25, a reduction of $8.90; No. 3 at $27.39, a reduction of $9.80; No. 10 at $60.75, a cut of $17.85.

Chicago, Ill., Jan. 16.—As of January 9, Crane Company reduced wages of shop forces 12½ per cent at their Bridgeport and Chicago plants, which are running at half-time capacity. The reduction affects between 10,000 and 12,000 employes. This is the first reduction made by Crane Company since it's high wage levels.

New York, N. Y., Jan. 17.—Middle States Oil Corporation has made application to the Stock Exchange to list $8,121,000 additional capital stock.

London, Eng., Jan. 17.—For the week ended January 2, this year, petroleum imports into Great Britain totalled 21,500,000 gallons.

TEXAS WILDCATS

	Completions	Producers	Failures	Initial Prod.	Monthly Prod.
January	12	6	6	235	3,000
February	20	7	13	1,150	5,000
March	29	10	19	1,390	5,000
April	36	13	23	1,510	3,200
May	35	12	23	405	7,000
June	31	11	20	705	3,000
July	43	12	31	1,300	10,540
August	33	6	27	125	4,000
September	45	13	32	450	3,500
October	64	14	50	1,025	6,200
November	33	9	24	1,185	6,000
December	19	6	13	260	6,000
Totals 1920	400	119	281	9,740	62,440
Year 1919	313	116	197	9,235	89,475

Lubricants for Rotary Tool Joints and Casing Threads

The following formulas for lubricants for rotary tool joints and for casing threads were supplied by E. S. Durward of the Shell Oil Company, Coalinga, California, and published in a recent number of Oil Field Engineering:

Formula for Lubricant for Rotary Tool Joints

Tallow	33.4
White lead ground in oil	23.2
Graphite	2.9
Cylinder oil	40.5

Melt tallow, add white lead, mixing well. Then add oil, stirring continually. Then add graphite and mix all together.

Formula for Lubricant for Casing Threads

Tallow, lb	200
White lead ground in oil, lb	300
Graphite, lb	24
Lard oil, gallons	30

Mix lead with some oil, also graphite with some oil, then melt the tallow. Finally mix everything together and keep stirring until thoroughly mixed.

Parkersburg, W. Va., Jan. 16.—The Parkersburg Rig and Reel Company has just issued a general catalog covering its line, which is a comprehensive text book on oil field equipment. The book contains more than 500 pages and a number of detail plates in addition to illustrations. Foundry parts of the different machines are shown in detail illustrations. The catalog lists everything used in drilling oil and gas wells, in both steel and wood, and steel and wooden tankage.

The Bureau of Mines has issued a report covering instructions on first aid in carbon monoxide poisoning. Copies are to be had on request to the Bureau at Washington.

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The confidence reposed in things built by Gardner is well shown by the fact that through three generations of engineers Gardner products have been the standard — a reputation gained solely through quality and not through price. So no matter what you may need in a Pump, Governor or Compressor, *you may rest assured that if you select a Gardner you will have bought "service" and "satisfaction."*

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Alamo Iron Works, San Antonio, Texas
Hardwicke-Etter Co., Sherman, Texas
Pelican Well Tool & Supply Co., Shreveport, La.
C. T. Patterson, Inc., New Orleans, La.
Kirk W. Eichelberger, San Francisco, Cal.
Norvell-Wilder Hardware Company, Mexia, Texas

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Pumps --- Governors --- Compressors

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Producing oil wells in Pacific ocean at Summerland, California, eighty miles north of Los Angeles —International Photo

Thumbnail Histories of Important Fields

Herewith are compiled and presented in brief form data on the principal pools in the most active sections of the United States

California

By B. V. Ellzey

THE first oil produced in commercial quantities in California was in the year 1867, though at that time the oil had no commercial value. The year 1876 marks the beginning of of records on production and value of oil in this state by the United States Geological Survey. From this period to the close of 1921 California produced a total of 1,431,658,000 barrels, approximately. The value of this oil, at the average market price prevailing at the time it was produced, was $1,166,794,958.

To undertake a history of the fields producing this volume of oil would be to undertake a task of a lifetime. In fact many volumes of history have been written, none of which, nor all of which combined, exhaust the subject. No other state has produced so much oil annually, nor for so many years in succession. In fact California accounts for nearly one-fourth of the total oil produced in the United States, in the history of the industry.

It will be possible, therefore, to give only the high points in the history of the several fields of the state in a brief review.

Up to the close of 1920, the producing areas of California were divided for convenience into ten major districts. During the year 1921 the Beach fields of Southern California have come into prominence, and at least one, and maybe two additional districts will be added by statisticians. For convenience in this summary, the fields at Huntington Beach and Long Beach will be treated together.

In compiling the data herewith, the Public Service Department of the Merchants' National Bank in Los Angeles has given valuable assistance, and George S. Ellis, Statistician for this Department, has devoted a lot of time and effort to the task of collecting, assimilating and verifying data used herewith.

The classification of fields in this state follows: Kern River, McKittrick, Midway-Sunset, Elk Hills, Lost Hills-Belridge, Coalinga, Santa Maria, Ventura-Newhall, Los Angeles-Salt Lake, Whittier-Fullerton and the new Beach fields. These fields are located in Kern, Fresno, Los Angeles, Orange, Santa Barbara and Ventura Counties.

Ventura-Newhall

This comprises the oldest producing area of the state, and the oldest of the country, outside Pennsylvania. The first well in this district was completed in 1867 in Ventura County (then Santa Barbara County). The Newhall section was first operated in 1876. The lease which produced the first well in Ventura County is actively producing oil now, and some of the first wells drilled in the Newhall field are on the active list at the close of 1921. The present combined acreage of these fields is approximately 5000 acres. The depth of wells range from 200 to 2000 feet, and the gravity of the oil produced from 11 to 56. The gross production now runs about 175,000 barrels monthly.

An interesting adjunct to this district is the little submarine field at Summerland. Here shallow wells produce a low gravity oil from beneath the ocean bed. In drilling these wells, some of them 20 to 30 years ago, wharves were constructed and drilling rigs snaked along the wharves, making a string of wells by each wharf. The production of this district now is about 4500 barrels a month.

Whittier-Fullerton

The Puente section of this district is credited with the first successful well in 1880. Old timers in California tell of how this oil, low gravity asphaltic base, was of little value at the time it was discovered. Finally, during one busy season for truck growers and farmers, a mysterious disease broke out among the work stock of the southern part of the state, a skin disease which threatened to depopulate the farms of all domestic cattle. It was discovered by someone that this crude oil produced from the Puente Hills would effectively stop the action of the disease, and the oil suddenly developed a sharp demand as a stock medicine. It was applied with a mop, rubbed in with a corn cob or other rough surface, and took the hair off wherever it toched. But it also took the disease with it.

The proven area of the district, up to January, 1921, was 5000 acres. Wells vary in depth from 200 feet to 5000 feet. The range of gravity of the oil runs from 14 to 35. The monthly production, prior to the new classification which separates some of the district, was about 2,500,000 barrels.

McKittrick

This producing field in western Kern County, had oil reported as early as 1884 and 1887, but not till the latter date is there any record of oil in commercial quantities. At present

Data on the Mountain States are shown in another section of this issue.—Editor.

Solve the troubles of sand, shale, lime water, gas and extreme temperatures—

Axelson Amco pump (working barrel)

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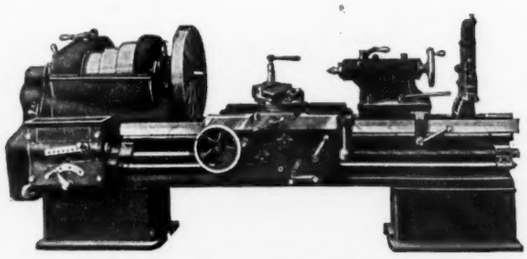

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The Glenn Pool as it looked in the early days —Photo by Clarence Jack, Tulsa

there are about 1500 acres of proven land, the depth of producing wells being from 400 to 1800 feet. The oil for the most part is heavy, the gravity range being 12.5 to 21. Monthly production runs about 200,000 barrels.

Los Angeles-Salt Lake

A deep well was reported in the Salt Lake section of this district in 1885, and oil in paying quantities was being obtained in the City of Los Angeles in 1892. Present combined proven area is 2600 acres. In the Salt Lake district the well depths run 300 to 3000 feet, and in Los Angeles from 500 to 1200 feet. Gravity of the oil in the Salt Lake is 10 to 25, and in Los Angeles 12 to 19. The monthly production now runs about 100,000 barrels.

Coalinga

Eighteen hundred and ninety is the discovery year for this field and there is a present total proven area of 17,500 acres. Wells are drilled from 300 to 4700 feet, and the range of gravity is from 12.4 to 35.5. Normal monthly production is about 1,000,000 barrels.

This field typifies very well the margin of opoprtunity for production at various depths in most of the fields of California. It is not unusual for a well to be a profitable producer from three or four different depths, from sands at these levels, and this is one of the factors which makes California wells so valuable.

Midway-Sunset

In the Sunset section, south of McKittrick, in western Kern County, the first showing of oil appeared in 1891. The Midway section was brought into prominence in 1900. The combined proven area of the fields now is 57,000 acres. Depth of production ranges from 400 to 4000 feet, and the oil is 11 to 30 gravity, depending upon the well. This district as a whole comprises more proven acreage than is found in any other California oil area, and accounts for about 4,000,000 barrels of oil a month at the present time.

Kern River

In 1889 the discovery well was reported in the Kern River field, and at present there is a proven area of 7900 acres. Production is obtained from sands all the way from 400 to 2000 feet, and practically all of it is low gravity crude, nothing being over 17 Be. The normal production for the field is about 630,000 barrels a month.

Lompoc-Santa Maria .

The years 1899, 1900 and 1901 saw vast expansion to the California producing areas, and the Lompoc and Santa Maria district came into prominence in the latter year. The present proven area as quoted by different authorities ranges from 4000 to 9000 acres, and the producing depths range from 1500 feet to 4000 feet. There is also a wide range in the quality of the oil produced, some of it being as low as 11 Be. while some tests as high as 37. The present production is about 450,000 barrels a month.

Lost Hills-Belridge

Oil at 472 feet was found in the Lost Hills district in 1910 and a year later oil was discovered at Belridge. The approximate combined proven area is 4200 acres, and the gravity of the oil produced ranges from 14 to 38 Be. Normal production runs about 310,000 barrels a month.

Southern Beach Fields

Huntington Beach was discovered as an oil field by the Standard in 1920, and Long Beach, to the north, by the Shell Company in 1921. Huntington Beach has been rapidly developed by stock companies as well as by the larger producers, and there are no well established limits to the field as yet. Long Beach production is confined at present to Signal Hill, a limited area in the suburbs of Long Beach, though this area may be extended by future exploitation. Further north and east along the coast are several wildcat operations, and at least one well, near Redondo, has indicated that another beach field may be developed during the coming months.

The following table shows the number of active wells, field by field, as of August, 1921, the last month before labor difficulties affected the production of fields in the San Joaquin Valley.

	Wells
Kern River	2,196
McKittrick	321
Midway-Sunset	2,486
Elk Hills	113
Lost Hills-Belridge	625
Coalinga	1,236
Santa Maria	436
Ventura-Newhall	550
Los Angeles-Salt Lake	667
Whittier-Fullerton	1,091
Summerland	142
Huntington-Newport	33
Long Beach	1
Total	9,898

Summerland Field

Summerland, off the Santa Barbara County coast, California, is said to be the only submarine oil field in the world. It has been producing oil for 36 years, and is still being operated, though no new drilling of consequence has been done for the past ten years.

The first well at Summerland was drilled by H. L. Williams in 1886. It got a sand at 385-407 feet, and went deeper to another sand which was not penetrated. It was located north of the little town, and across the railroad, on the land side. Additional wells in the same territory ran from 80 to 150 feet deep, drilled with portable rigs, and produced heavy oil.

It was found that the sand dipped sharply to the south, and following the trend of this dip, operations crossed the railroad, and approached the surf. The wells north of the road soon became exhausted, while those drilled deeper to the south have been long lived producers.

Since the beach belonged to the Government, there was a mad scramble for drilling sites there, and the area was divided into small parcels. Over a hundred producers operated in the field at one time.

In drilling the wells in the surf wharves were thrown out, from which operations were conducted. A section of big (conductor) pipe was driven into the sand, and drilling was carried on inside this pipe. The rig was set on temporary planking on the wharf, and one rig often drilled a string of wells along the wharf. It was then left for cleaning out and pulling rods. The longest wharf was 1230 feet in length.

Drilling of wharf wells stopped about 1899, though there was never any limit of the "field" found, for the farthest out wells were just as productive as those drilled closer in. Most of the wharf wells ran 250 to 450 feet in depth, and produced oil of 12 to 16 Be. gravity.

In spite of the fact that the wells were drilled below the water line, the field was for many years considered "dry," that is without

Columbian Bolted Steel Tanks

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First in Service
First in Every Field

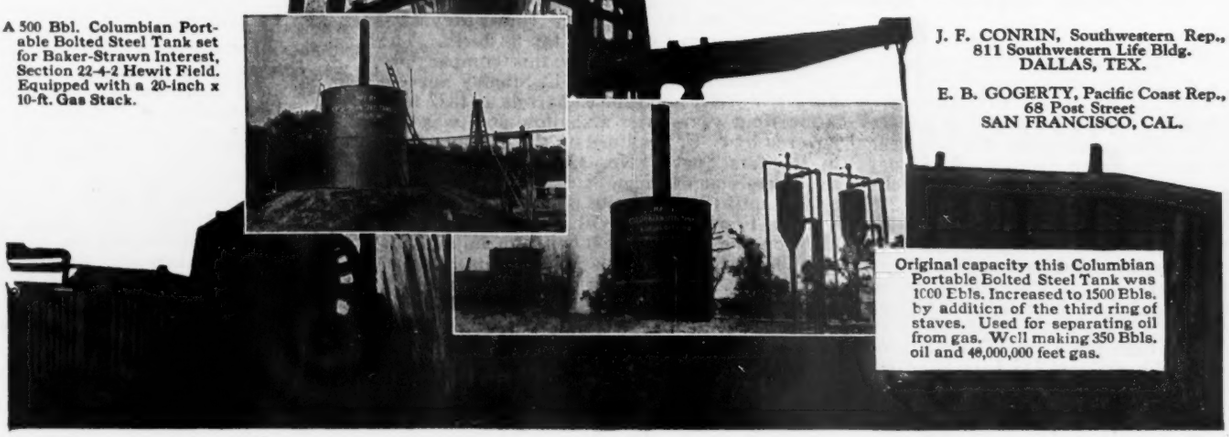
Columbian Portable Bolted Steel Tank, 250 Bbls. Capacity, furnishing water supply to lease houses in new oil field. Wirt-Franklin property, Fox, Okla. This is its third setting and is giving entire satisfaction.

A battery of twelve 250 Bbl. Columbian Bolted Steel Tanks set for Carter Oil Co., Woodruff Lease, Hewit Field, Carter County, Okla. J. F. Conrin, Southwestern Representative and Mr. McPhail, Service Tank Co., Dealer-Erector, inspecting the setting.

A battery of eight 500 Bbl Columbian Portable Bolted Steel Tanks set for the Kentucky Co., Vick Lease, Ivan Dist., Breckenrided, Texas.

A battery of two 2000-Barrel and two 250-Barrel Columbian Portable Steel Tanks set for Selby, Root & Hogur, Wardman Lease, Yorba Linda—5 miles from Brea, Calif. A picturesque setting in an extensive lemon grove.

A 500 Bbl. Columbian Portable Bolted Steel Tank set for Baker-Strawn Interest, Section 22-4-2 Hewit Field. Equipped with a 20-inch x 10-ft. Gas Stack.



Original capacity this Columbian Portable Bolted Steel Tank was 1000 Bbls. Increased to 1500 Bbls. by addition of the third ring of staves. Used for separating oil from gas. Well making 350 Bbls. oil and 48,000,000 feet gas.

Any Columbian Dealer-Erector can now supply Columbian Portable Bolted Steel Tanks of "Gas-tite" construction—a preventative of loss through evaporation. Made thoroughly practical by a simple two-way, self-acting vent which prevents excess pressure in filling and vacuum in emptying.

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All Sizes—Including 5,000 and 10,000 Barrel

Columbian Portable Bolted Steel Tanks are available in all standard sizes. Only Columbian Dealer-Erectors can supply bolted steel tanks of 5,000 and 10,000 barrel capacity.

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Derrick to left is Humble Oil and Refining Company's No. 3 Melgard at West Columbia, extending famous Gulf Coast field to west. Several locations are being made.

—Photo by Fuzzy, Wichita Falls

North Central Texas

By H. H. King

Petrolia

Honor for being the oldest field in North Texas goes to Petrolia where the Clay County Oil & Pipe Line Company brought in a 200-barrel well on the Lochridge farm, located in the northwest corner of block 25, Parker County school lands, in March, 1905. Production was gotten from 25 feet of oil sand picked up at 722 feet, and the well had a total depth of 765 feet. It has been abandoned for many years. Large gas wells were brought in several years after the first oil producer was completed, and the field is now considered one of the most important helium gas producing areas in the world. No new developments are going on in the field, which now has a daily average production of 330 barrels from more than 500 completed wells.

water in the sands. The action of storms, tearing down the wharves and breaking off the conductor pipe below the surface of the water finally caused the oil sands to be flooded, and for many years now the field has been "wet." It is not difficult, however, to separate the oil and water. The oil is settled out in stripping boxes, and then run to tanks heated with pipe coils where heat is applied. From these tanks it goes to settling tanks, and is run off practically free of ocean water.

For many years there was a small refinery handling most of the output of the field. Finally this plant was moved away, and another small plant built, which is still in operation. It produces heavy distillates and fuel or road oil.

In 1894 the field produced a total of 1800 barrels of oil. In 1895 there were 28 wells producing, with a total recovery of 16,904 barrels for the year. In 1903 there were 412 wells, 198 of which were producers and 100 had to be abandoned. The production for the year was 131,000 barrels, or an average of 1.82 per well per day. In 1910 there were 440 wells recorded, 175 of which were producers, and 216 had been abandoned. There were 121 wharf wells at this time. The recovery for the year was 75,050 barrels, or 1.18 barrels per well per day. In 1912 there were 135 producing wells, making an average of 1.5 barrels per well per day.

At the present time there are 137 wells producing in the field, making 148 barrels of oil a day. More than 90 per cent of the fluid produced by the wells at the present time is water.

The oil finds a local market in the adjacent coast cities for fuel and on the paved highways of the county.

Electra

Electra is recognized as the second oldest oil field in North Texas, having furnished its first producer in April, 1911, on the Putnam farm, in H. & H. N. Block No. 2, with an initial flow of 260 barrels from six feet of oil sand encountered at 1618 feet. In March, 1914, the South Electra field was brought in on the Waggoner ranch. The Electra field has produced a grand total of more than 50,000,000 barrels during its ten years existence, and made as high as 15,000 barrels per day in August, 1918, but is now doing only about 11,500 barrels daily. It has eight distinct producing horizons ranging from several hundred feet in depth to 1800 feet. The South Electra pool centering on the Burnett and Waggoner ranches, was one of the most active sections in Wichita County during the last half of 1921, with flowing and pumping wells producing from 5 to 600 barrels daily.

Burkburnett

Burkburnett, probably the most spectacular of the fields developed in Texas, is indebted to the Corsicana Oil Company (now the Magnolia Petroleum Company) for its birth. The first well was completed by this company on the Schmoker ranch on the E. Stanley Survey, on July 8, 1912, good for 85 barrels at 1837 feet. About four years later a shallow pool was discovered by C. C. Bradford on the Cropper tract in Winters Survey No. 322 pumping around five barrels at 643 feet.

Not until the Townsite pool was brought in by the Fowler Farm Oil Company in July, 1918, on the Fowler tract with an initial flow of 1600 barrels did the field attain national prominence. Drilling on town lots followed, and soon the town of Burkburnett was literally a wilderness of derricks.

The spotlight of interest centered on this pool for nine months, then the Burk-Waggoner Oil Company brought in a 2750 barrel well on the Waggoner ranch in the Northwest Extension that resulted in the shifting of the scene of major operations to the latter pool. The Waggoner well encountered the pay at 1674 for a thickness of 30 feet, and is still producing oil.

Still another pool was added to the Burkburnett field in October, 1919, when the Texhoma Oil & Refining Company's Daniel, located southeast of the town of Burkburnett in the H. Hastie survey No. 99, began flowing 225 barrels at 1300 feet. This pool became known as the Texhoma, or Southeast Burkburnett field, but it did not prove as sensational as its sister pools. A 1025-foot sand was discovered on the Dodson tract, located west of the original well, in October, 1921, and is at present providing a big portion of the new production being added to the Burkburnett field proper. Burkburnett's combined pools reached their peak notch in production in the fall of 1919 with a daily average of more than 100,000 barrels, and on the first of January, 1922, had settled to 36,540 barrels.

Archer County

Archer County's latest pool was discovered by the Texhoma Oil & Refining Company on the S. M. Gose ranch in March, 1921, with an initial flow of 300 barrels at 1603 feet. It soon adopted the name of the Texhoma pool, and reached its peak activity and production late last summer with about 50 wells drilling and a daily average production of 2500 barrels. A second sand at 1300 feet was also developed good for 100 to 200 barrels daily soon after the first producer came in. The Texhoma Company controlled the cream of the acreage, and at the close of 1921 owned 1300 barrels of the field's daily average production of 1800 barrels. In the same county, the Holliday field was discovered in December, 1916, by the Panther Oil Company on the Wilson ranch with an initial production of 35 barrels. This field was confined to small area, and at present is inactive with only a few small pumpers in operation.

Young County

Young County's Bunger pool is the latest important discovery in North Texas, furnishing its first producer in August, 1921, on the R. D. Owen tract with an initial flow of 240 barrels at 1900 feet. A second sand was picked up in November at 2600 feet on the Grimshaw tract, and in the last week in 1921 a third producing horizon was struck on the same tract at 3630 feet. At the close of 1921 this field's possibilities were undetermined and gave promise of being extended on all sides, with a daily average production of 6000 barrels. In the same county, the South Bend pool completed its first producer on the Donnell farm making 50 barrels at 1880 feet in November, 1919. Later the heart of the pool centered around the upper bend of Clear Fork on the M. K. Graham and McCluskey farms. Additional pay formations were discovered, and producing wells are being gotten at 1800, 1900, 2100, 2500, 3000, 3500 and 4000 feet. The peak of production was reached in August, 1921, when the daily average pipe line runs amounted to about 1,500 barrels. The largest producer was completed in December, 1921, on the B. F. Scott-Smith tract making 2500 barrels at 3520 feet. The Graham field failed to materialize, although one well was completed good for 40 barrels at 3992 feet in December, 1919.

K-M-A

The Kemp-Munger-Allen field, located west of Iowa Park, broke into the limelight in November, 1919, when the Kemp-Munger-Allen Oil Company completed its test on the Munger farm, Section Block 30, Kemps W. V. F., with an initial flow of 300 barrels from nine feet of sand picked up at 1762 feet. Considerable drilling operations followed until September, 1920, when salt water virtually flooded the field. The largest daily average production in the history of the field was reported late in August, 1920, with a total of 7200 barrels. At the close of 1921 less than a half-dozen wells

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5′ 4″x72″	1,000	3/16	3/16	1,200	8′ 0″x26′ 7¼″	10,000	¼	¼	9,100
5′ 4″x12′	2,000	3/16	3/16	2,000	10′ 0″x17′ 9″	11,500	¼	3/16	7,300
5′ 4″x23′ 7″	4,000	3/16	3/16	4,000	10′ 0″x17′ 9″	11,500	¼	¼	9,000
8′ 0″x13′ 6″	5,000	¼	3/16	4,500	10′ 6″x23′ 9″	15,200	¼	3/16	9,000
8′ 0″x13′ 6″	5,000	¼	¼	5,500	10′ 6″x23′ 9″	15,200	¼	¼	11,000
10′ 6″x11′ 11″	7,700	¼	3/16	7,000	10′ 6″x29′ 5″	19,000	¼	3/16	10,600
10′ 6″x11′ 11″	7,700	¼	¼	7,500	10′ 6″x29′ 5″	19,000	¼	¼	13,200
8′ 0″x21′ 4″	8,000	¼	3/16	6,100	10′ 6″x35′ 2″	23,000	¼	¼	15,400
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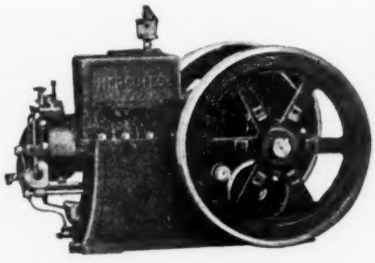

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Field Completes Tenth Year; Not a Dry Hole in Proven Territory

SAN ANTONIO, TEXAS, Jan. 14.—The Somerset (Texas) shallow oil pool completed its tenth year with the close of 1921 without a single dry dry hole in proven territory since the discovery of the field, probably the most remarkable record in the history of Texas oildom.

In justice to the facts it must be stated, however, that for the first seven years, the field had only eight or ten very small wells and development did not really start until three years ago.

The field today has approximately 300 producing wells ranging in depth from the older wells finished around 900 feet with from one to four barrels production to the latest completions in sands at 1250 feet and 1600 feet ranging from eight barrels to 45 barrels flush production. The wells finished at 1250 feet are in what is known as the Marathon sand in the eastern extension of the field discovered about one year ago by William Harper, field manager for the Marathon Oil Company. The 1600-foot wells are in the main field in Atascosa County, where the Grayburg Oil Company, The Frontier Oil Company, The Witherspoon Oil Company and numerous others have done the bulk of the drilling. This is the most productive sand in the field, some wells flowing by heads when drilled in. All production in the field is obtained by pumping.

So far as the records show and so far as inquiry among the veterans of the field indicates, Somerset never has had a dry hole in proven territory and it has enough proven acreage for several thousand more wells. Its boundaries have not been defined except to the extreme southwest and there is still considerable doubt as to whether the two or three wildcats drilled in that territory could not have made wells at around the usual depth but most of them were put down with a view to deeper oil and went on through the formations where oil has been secured in the upper field. Several wells have been abandoned in proven territory in the life of the field to date but not because there was no oil. Crooked holes, lost tools, and drilling troubles of one kind or another made it advisable from a monetary standpoint to plug the holes and move to new locations where oil was producer on the same leases. The Marathon Company, for instance, had two small wells and decided to deepen them in the hopes of increased production. They got a heavy oil unlike the light oil found in the upper sands but it was quickly followed by a heavy flow of warm, black, sulphur water and the wells were closed in. Recently, however, the company has begun experiments to cut off this water and reports prospects for six or seven barrels of heavy oil from even these two holes.

One well was drilled on the townsite of Somerset a couple of years ago outside of the proven area and either went into an uplift of the Edwards or was on top of a huge boulder such as is found sometimes in the field. The hole got a flow of water but no oil and was abandoned because of difficult drilling at around 2400 feet. Down in the field, due east of this test, C. Kurz, discoverer of the pool deepened a well to almost identical depth and got about eight barrels of oil but found no rock of a nature similar to the townsite rock indicating that either a faultline exists on the townsite or else there is a big boulder there. The Marathon Company drilling in the eastern extension in 1921 located a well on top of a boulder near the surface. The rock was flinty and full of pyrites of iron and after vainly trying to drill it, the company skidded the rig to a new location. It had to skid twice in two directions to get off the boulder, whereupon it went down in record time in customary formation and got a fine well.

The Somerset oil sands are not true sands. Apparently the field is streaked with sands shooting upwards through from 500 to 700 feet of blue shale which also is oil producing when not too tightly packed. When the drill hits a loose streak of sand and gravel, the well usually produces double the normal yield of oil. When the sand is hard packed, the yield is around 8 barrels. The Somerset oil is of mixed paraffin and asphaltum base, very light and in one well of the Frontier Oil Company runs as high as 45 per cent Baume gasoline. Drilling in Somerset is the surest oil proposition in Texas. One operator aptly described the field not as "an oil pool but a bank. The oil is there is proven territory at a known depth. All you have to do is to drill a hole to the required depth and take out your oil just as surely as drawing money from a checking account. Failure is practically unknown except when inexpert drillers lose the hole."

The Somerset wells, due to the immense shale deposits whence the oil comes, are believed to be good for 75 years. In ten years, well, properly maintained, report no slump whatever in production. The field is reasonably free from water. Drilling water is secured in ample quantities in the first 250 feet. The field is connected to San Antonio by a 7,000-barrel pipe line owned by the Grayburg Pipeline Company, a subsidiary of the Grayburg Oil Company, which in addition to extensive drilling and production interests, operates a refinery here and retail gasoline stations throughout the city. There are two small refineries in the Somerset field, the A. B. Slimp refinery and the Eggleston refinery at the townsite. The Grayburg has a casinghead gas reduction works, extensive warehouses, loading racks and equipment. The San Antonio Southern railroad crosses the field and there is an excellent rock highway from San Antonio to the field which is exactly 18 miles southwest of this city.

Unlike most oil fields, the Somerset pool is located in the heart of a rich agricultural district and some of the finest peaches, pears, plums, berries, melons and other products in Texas are grown there. One of the tragedies of the field is orchard after orchard, with derricks among the dying fruit trees in which the weeds and cockle run riot. There are many fine orchards still, however, just outside the proven area, some of which pay almost as handsome dividends as the oil wells, in favorable seasons.

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were being drilled in the entire field, and daily average production amounted to 1775 barrels.

Iowa Park

The shallow field in the Iowa Park district was brought in by the Forest Oil Company on the Ferguson farm, located in the southeast corner of Block 30, L. Netherly survey, in January, 1913, and about six months after the first producer was scored in the old Burkburnett field. The Iowa Park discovery well was good for 20 barrels from an oil sand found at 486 to 506 feet. This well is now inactive. Numerous productive horizons were later encountered at depths varying from several hundred feet to 1000 feet, but all the wells were small producers and long lived. Practically no developments are going on in the field now, and the daily average production is slightly better than 600 barrels.

Stephens County

Stephens County, the only major oil field in Texas furnishing production from black and gray lime formations, scored its first producing well October 30, 1916, when The Texas Company completed No. B-1 J. W. Parks, located southeast of Breckenridge, making 75 barrels initial production at 3250 feet. The production of this well was comparatively small, as was proven months later when wells in the gusher class were brought in. It was abandoned February 9, 1919. Stephens County did not get its big play until 1919 and 1920. The largest completion in the history of the field was drilled by the Gulf Production Company on the K. Stoker tract, located two miles south of Breckenridge. It was known as No. 2 well, and came in early in May, 1920, making 15,000 barrels at 3300 feet. During the second week in January, 1921, the daily average production for the field reached a high point of 120,275 barrels, and at the close of the same year had settled to 55,730 barrels.

Desdemona

The Desdemona field was put on the map early in 1919. It proved to be a short lived pool. Total production for the first year was 7,375,825 barrels. After that the output declined steadily until it is now around 4000 barrels daily.

Ranger

The Ranger pool dates back to October, 1917, when the Texas & Pacific Coal & Oil Company completed No. 1 McCleskey at 3484 feet for 300 barrels. After this development was rapid at Ranger and soon spread to the other fields of Central Texas. The banner year for Ranger was 1919, when more than 22,000,000 barrels of crude was taken from the wells. Since then the decline has been steady.

Callahan County

In the northeastern corner of Callahan County is located a shallow field first discovered in the spring of 1921 and now with a daily average production amounting to about 300 barrels from flowing and pumping wells producing from an oil sand at 480 feet. Activity at the close of the year 1921 was considerably on the increase as result of pipe line facilities having been obtained. Gas wells are also being brought in with daily production ranging from one to five million cubic feet.

Texas Gulf Coast

By Grady Triplett

From the discovery of oil near Nacogdoches back in 1866 to the present development of the new and promising Orange field, there are many stars in the Texas offering to the firmament of petroleum. Some shine brilliantly, like the pure gems they are. Others twinkle but faintly.

All in all, the Lone Star State offers a variety in oil development equalled by no other state. It has the great salt dome pools, where the rotary system had its birth. Then in West Texas is Stephens County where the cable tool rig holds sway and where no subsurface water was ever found that could be used in an oil field boiler. Between those extremes, it

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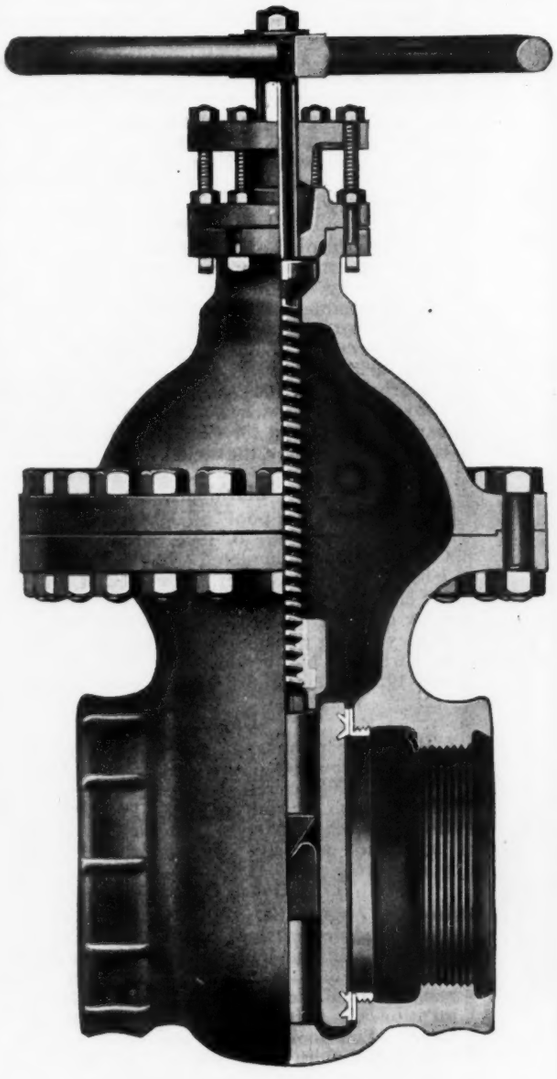

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Nacogdoches

Although not generally known, oil was first discovered in Nacogdoches County at Oil Spring. There in 1866 oil was found at 100 feet. The well flowed 300 barrels the first day but soon ceased to flow. This was followed by other wells, some of them dug by pick and shovel. From most of them the oil was bailed.

This production led to the construction of a 2000-barrel tank at a nearby railroad and the construction of a pipe line from the wells to the tank. Soon afterward it was found that the oil contained no illuminating content so the field was given up.

It is in this old field that drilling is now being done and a high grade of oil produced. It has a high lubricating content. Production there now is around 250 barrels daily.

Corsicana

But it was not until 1895 that Texas found a place in the galaxy of petroleum. That was the year in which Corsicana came forward with producing wells. In drilling for water, a municipal venture found an oil sand at 1027 feet. This was cased off and the water well completed at 2470 feet. Soon oil appeared around the casing of the water well. In 1895 a company was formed and the first well completed. By 1898 the field had 100 producing wells. The high production mark was reached in 1900 with 829,560 barrels. The whole Corsicana area now produces around 700 barrels daily.

Spindle Top

Perhaps the brightest spot in Texas oildom is January 10, 1901. It was then the famous Lucas gusher put Spindle Top in the limelight. Of no less importance was the use of the rotary drilling system on this well. It was introduced by Captain A. F. Lucas, woh had had previous experience with the system in Louisiana, where he had drilled for oil. During 1902 Spindle Top had a production total of 17,420,000 barrels of oil. The field is now of minor importance, producing around 700 barrels daily.

Success at Spindle Top started the rush of drilling in the salt dome country of the Coastal plains of Texas and Louisiana.

Sour Lake

At Sour Lake in Hardin County some shallow production was found in March of 1902. By July of that year the field was on its way to big production, which showed in the total for 1903, 8,848,159 barels. In August, 1903, Sour Lake was producing around 100,000 barrels daily. Oil was found at Sour Lake as shallow as 370 feet and as deep as 4000 feet.

Batson

Then in 1903 the Batson pool was put in the production class. The first well was completed in October of that year at 790 feet. The big wells were completed later at 1190 feet. By 1904 the field was producing as high as 130,000 barrels daily and the total for that year was 10,904,000 barrels.

Humble

Although there had been previous production from small wells, the Humble field dates from January, 1905, when the Beatty well was completed. For that year the field went to the fore as an oil producer in Texas, contributing 18,066,428 barrels. The production gradually dropped until 1915, when deeper drilling brought production from other sands and sent the total for the year up to 11,061,802 barrels. Since then Humble has fallen off in production until it is now doing around 8000 barrels daily.

Saratoga

Although one of the oldest fields in the Texas coastal country, Saratoga has never offered any spectacular performance. Ben Hooks completed No. 1 Hooks there in 1901. Shortly afterward acreage at Saratoga was taken over by a few large interests. They have drilled slowly. The first oil was not sold there until 1903 and production does not show until 1904, when the total was 739,000 barrels. The total for 1905, 2,922,215 barrels, is the high mark for the field.

Markham

The Markham pool of Matagorda County dates back to June 6, 1908, when the Hardy Oil Company completed No. 1 Hudson for 3600 barrels at 1734 feet. It flowed at this rate for 30 days, then showed salt water and gradually declined. Since then this field has given flashes of big production but so far has failed to turn out big production. The best year was 1911, when 561,828 barrels were produced.

Dayton

Back in September of 1905 the Paraffine Oil Company completed the first well at Dayton, good for 5000 barrels daily and this field was added to the coastal country. Production for 1906 was 192,460 barrels. The field is of minor importance new but drilling is still in progress there.

Goose Creek

Until August 24, 1916, Goose Creek was considered one of the big failures of Texas oil circles. Millions had been spent but no oil produced. The American Production Company finished No. 1 Gaillard on the date just mentioned. After that development was rapid. The banner year was 1918 when 9,419,132 barrels were produced. So far no salt was ever penetrated in the drilling at Goose Creek.

Hoskins Mound

Hoskins Mound in Brazoria County is not now an oil producer. But oil was found there in 1905, a 3000 barrel well at 582 feet. It soon ceased to flow. Other wells showed slight production. At present Hoskins Mound is the center of efforts to define a sulphur deposit.

Barbers Hill

Drilling at Barbers Hill in Chambers County, dates back to 1901. But first production was not found until 1918, when the field pro-

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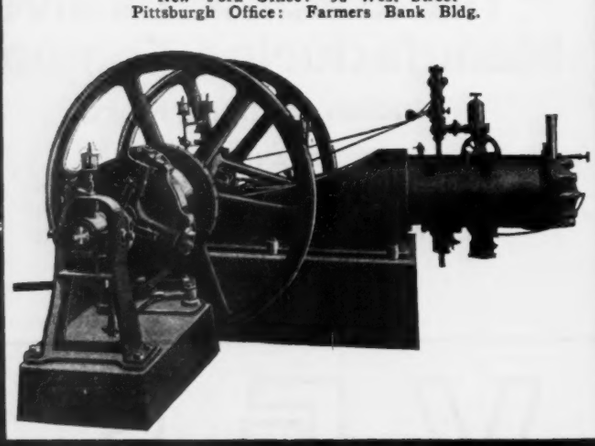

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duced 20,000 barrels. In 1919 Beckenstein et al completed a well good for 300 barrels daily. In that year the field produced 169,415 barrels, its best figure.

Damon Mound

First production at Damon Mound dates back to December 28, 1915, when the Texas Exploration Company completed No. 1 Wisdom. It was not until 1918 that production was of any consequence. The high mark was reached in 1920, 677,402 barrels.

Hull

The first well at Hull was completed in July of 1918. The field has been slowly drilled, as most of the acreage is held by large companies, which are not disposed to drill when oil is not needed. Production for 1920 was 2,758,573 barrels. Hull is supposed to have many acres of undrilled production.

West Columbia

The West Columbia field owes its first claim to fame because of The Texas Company's No. 1 Abrams, completed there July 20, 1920. This well alone was sufficient to place the field well to the fore in production. The field had its big year in 1921, 12,573,450 barrels. First production at West Columbia was recorded in 1918, when the total was 136,000 barrels. Previous to this oil had been found in small quantities.

Pierce Junction

Another field where it took many years to find the oil bearing formation is Pierce Junction, just south of the City of Houston. Drilling that started there in 1901 had its first success, except for gas, when the Gulf Production Company's No. 2 Taylor turned to an oil well after being completed as a gas well February 19, 1921. The next well was the Snowden & McSweeney on the Cain tract, which was completed for 3000 barrels initial production July 14 at 3960 feet. Other wells were drilled with success. Shortly afterward, sand and salt water began to encroach on the field and the end of the year found it of little consequence as a producer.

Orange

The latest field for the coastal country is the Orange field. Just now it promises to contribute millions of barrels to the oil production of Texas. The old Terry field of Orange County dates back to August 13,1913, when the Rio Bravo Oil Company completed No. 1 Land at 3128 feet. It was then the deepest producing well in Texas, Louisiana or Oklahoma. Then the field seemed to pass away.

Then, March 19, 1921, the Little Six Oil Company got a small well on the Chesson tract at 1760 feet. September 30, the Edgerly Petroleum Company completed No. 1 Carbello for 3000 barrels at 3360 feet.

This deeper sand served to prompt and to encourage those holding acreage in the Orange field. December 28, 1921, the Humble Oil & Refining Company completed the banner well of the field, No. 5 Chesson, for 10,000 barrels at 3900 feet. It tore all connections loose and Jan. 1, 1922, made 15,000 barrels.

Just now the Orange field is entering a big drilling campaign with this deeper sand the object of every drill.

Blue Ridge

The Blue Ridge field, another of those to show frequent flashes, dates back to 1918, when the Gulf Production Company found oil at 2700 feet on the Blakely C lease. The well was good for 1200 barrels initial production. Since then there have been several good wells, which flowed for only a short time. This field often produces a high gravity oil of big kerosene content.

Thrall

One of the early fields of the Central Texas section was that of Thrall, which came in February 25, 1915, when the Taylor Oil & Gas Company completed a well on the Fuchs tract. The Thrall field staged a spectacular but brief act. In its first year, the field produced more than 600,000 barrels of oil. It declined rapidly and is now good for around 400 barrels daily.

Mexia

Just now the chief development within Texas is at Mexia, the Limestone County field, which dates bock to November 25, 1920, when the Humphreys Petroleum Company completed the first well on the Rogers farm. Previous to this the well had made a head of oil and gas.

Although the Rogers well indicated a big oil pool in the Woodbine sand, beneath an old gas field, the field was slow of development. For one thing, the acreage was closely held by the Humphreys interests. Pipe lines were near but none was built to the field for almost one year. The oil was listed as having small gasoline content.

Development hit its stride at Mexia in the latter part of 1921. For the final week of December, 1921, the average daily production was 141,000 barrels. One day of that week it was 153,000 barrels.

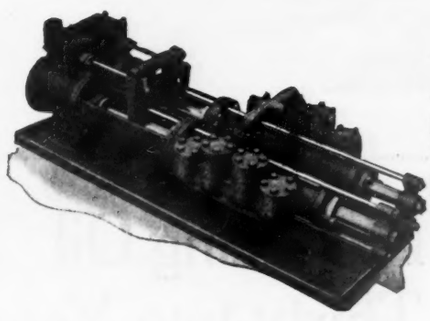
Mexia is still an unsettled question. It is having some water trouble. It was the big field of 1921 and still holds millions of barrels of oil.

Somerset

The Somerset field near San Antonio was brought in during 1911. It has been a small field from the beginning. During 1921, its tenth year, not a failure was recorded within the proven area of the field. Records do not show a failure ever drilled within the field proper.

In 1920 the field produced in excess of 140,000 barrels of oil. The field still has scores of undrilled inside locations.

TRANSIT



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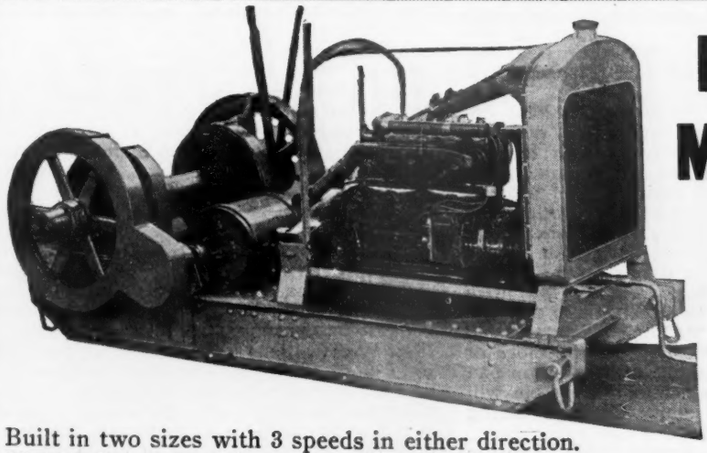

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The famous Trapshooters lease in Towanda pool of Butler County, Kansas
—Photo by Clarence Jack, Tulsa, Okla.

Kansas Has Been Producing Oil for About Thirty-two Years

INDEPENDENCE, KANS., Jan. 15.—Finishing thirty-two years of production with the close of 1921, the total recovery of crude oil from the Kansas fieds will aggregate approximately 225,000,000 barrels. This output ranges from 500 barrels, the total yearly production in 1889, to in 1918 when more than 45,000,000 barrels were put on the market. This last figure represents the largest yearly production that the state has yet experienced. Although official figures on the total production for 1921 have not been compiled, it is estimated that the output will be in excess of 30,000,000 barrels.

While an unsettled crude market kept development at a low mark during 1921, the state was far from being inactive. With the aid of the Covert and Florence districts of Marion County, which reached their peak of production during the year, and the Butler and Greenwood County fields, new marks were reached in daily production during the twelve months. Even after the effects of the curtailment in drilling, resulting from the low price of oil, were beginning to be felt, these districts were responsible for holding production up around 100,000 barrels daily. At the close of the year, however, a decline in production had set in, and from all indications the state will reach new low levels along this line during 1922.

Drilling activity was largely confined to the proven districts during the year, and wildcat work was more or less spasmodic. A few good extensions were uncovered, but very little territory was added to the producing lists.

Although it was in Kansas that the vast Mid-Continent field first took definite form, the startling developments in Oklahoma, North Texas, North Louisiana and Arkansas overshadowed those of the Sunflower State, and have kept it in the bankground. It was the early development in Kansas that first attracted the operators of the East to the possibilities of these states, and was largely responsible for the extensive work that has followed throughout the Mid-Continent.

Oil Seepages

Indians and pioneers are said to have known of the existence of oil and gas in seepages in Kansas as far back at the early fifties of the nineteenth century, and an effort was made to tap the oil sands of the state in 1860. At this time Dr. C. W. Brown, in following out his declaration on oil seepages in Miami County, published in 1855, undertook to find the fountainhead which these seepages evidenced, and drilled a well near Palo in Wyandotte County. So far as known, his well yielded a small amount of both oil and gas. It was not, however, until 1882 that oil was found in commercial quantities in this locality. While records vary as to the exact location and owner of the original wells, it is understood that they had a production of 5 to 10 barrels in a shallow sand.

From this time until 1889 little effort was made to determine the existence of oil in the state. Late in 1889 a test was drilled near Neodesha, which it is represented as showing good for a producer. Three years later, in 1892, W. T. Hills drilled two oil wells in Wilson County. With the circulation of these findings in the eastern field, operators from the older producing sections of the country began to make their appearance in Kansas, and it was then that the development of oil in the Mid-Continent began in earnest.

Due to the lack of a market for the oil and the cost of putting down wells, work was very slow until after 1900. In 1893 the Neodesha field was proven, and a gas field at Iola, in Allen County, was also uncovered. Following these developments, operations were largely confined to the shallow sand of these counties, and drilling activity was more or less spotted with Chautauqua, Montgomery and other surrounding territory experiencing a small amount of work. At the close of 1899 it is reported that something ike 250 wells had been drilled in the state. This number was doubled during the following year.

Start in Earnest in 1920

It was not until 1920 that any great amount of work was reported from the Humboldt, Coffeyville, Independence and Chanute districts, but after this year these districts became the principal producing sections of the state until the later discoveries in 1914. With production shown in six counties at the close of 1901, the state's yearly output reached the 175,000-barrel mark. Production steadily increased until 1904, when the annual recovery was better than 4,000,000 barrels. After this a decrease was registered until 1916, when production jumped to 13,896,700 barrels. During this period several other counties were listed with those producing, among which was Butler.

Up until 1914 the Augusta field in Butler County was only considered as a gas producing section, but in that year the Continental Oil and Gas Company drilled a dozen or more oil wells, of which one was reported to have shown an initial of 1500 barrels. The Augusta pool developed into large proportions during 1916 and reached its peak in April of 1917. Since this time it has declined to around 10,000 barrels a day, at which figure it is holding steady.

The unusual size of the wells at Augusta caused a general drilling campaign over Butler County, and the discovery of the El Dorado and Towanda pools followed closely upon that of Augusta. At the close of 1916 the El Dorado field had a total of about 600 producing wells, which were giving up a daily production of about 15,000 barrels. The Augusta pool at the time was making 45,000 barrels a day from 200 wells. In April of the year the Prairie Pipe Line Company laid an eight-inch line from Augusta to Neodesha and connected the Augusta district with El Dorado with a 4-inch one.

Towanda Pool

The Towanda field, which is famous because of its large wells, was developed in 1917, and by April, 1918, had reached its highest production, when its daily output amounted to 96,000 barrels. Wells brought in in the Towanda dis-

(Continued on next page.)

First Well to Find Showing of Oil in Oklahoma Drilled in 1882

By Spencer W. Robinson

TULSA, OKLA., Jan. 15.—Despite the fact that the year 1921 got under way in face of one of the most disastrous reactions yet experienced by the oil industry, crude prices dropping from $3.50 a barrel to $1.00 in a period of a few months, Oklahoma, while caught with a large overproduction, had one of the most remarkable years in its history in so far as field development and production was concerned.

The curtailment of drilling wells inaugurated to bring productions down to a more reasonable level, and the loss of considerable production, with the abandonment of hundreds of small pumpers owing to unprofitable operation at the prevailing price of crude, failed to bring about a loss in the state's output.

Official figures show that approximately 50,000 producing wells in Oklahoma were at the beginning of the year turning about 314,000 barrels into the pipe lines daily. While the number of wells remained practically unchanged during the month of August, the daily production had increased to more than 330,000 barrels a day. At the close of the year the daily output was again down to the 314,000 barrel mark. Completions, although much fewer in numbers than previous years, showed greater producing qualities.

The further development of the new Okmulgee, Okfuskee, Creek and Stephens County fields, together with the Hewitt pool, in Carter County and the Burbank field of Western Osage County, and the discovery of a number of new producing sections in both the northern and southern parts of the state, briefly summarizes field work for the twelve months.

The Burbank pool, which was first opened by the Marland Oil Company in early 1920, did not begin to show much progress until the first of 1921. During the twelve months following it jumped from a pool with a few good producers to a field with 115 wells having a daily production of better than 33,000 barrels. The Burbank district, at present the "Mexia" of Oklahoma, is at the top in the production list, and is in the midst of an extensive drilling campaign. The prices paid for the offsetting acreage in this field during the year gave the financial pessimists several setbacks.

Carrying old wells to deeped sands in the Hewitt field resulted in a material increase in the field daily output, which just fell short of reaching the 50,000-barrel mark during the summer months. The field was extended to the southeast during the year by the bringing in of a producer in section 36-4s-2w.

Wildcat operations throughout the state, while held in check by financial conditions, resulted in the developing of a new field in Garvin County in the southern part of the state, and also at Tonkawa, in Noble County, and Deer Creek, Grant County. These sections were followed by the bringing in a considerable new production in southern Okfuskee County, and near Bristow, in Creek County. The latter named districts are giving promise of becoming some of the state's best producing territories.

Duncan Pool

The Duncan pools of Stephens County were brought to the front during the early part of the year with a production of something like 25,000 barrels a day, but these sections developed salt water and were practically inactive by the first of 1922.

While the development of the Oklahoma fields has been comparatively recent, the extent of this development has been such that little time was devoted to the keeping of records at the different stages of the state's progress as an oil producer. Therefore any data along this line has become very valuable.

Exploration for oil in Oklahoma followed shortly upon the discovery of that product in Kansas. With the proving of the existence of oil in the latter state in 1882 by the use of the drill, the five civilized tribes of Indian Territory started investigations with the result that the Choctaw and Cherokee tribes authorized companies to be organized to drill for oil and gas in the territory.

In 1885, Dr. H. W. Fawcett, of New York, started the first well in the state on what was then the Choctaw Nation, near Clear Boggy Creek, west of Atoka, in the southern part of present Oklahoma. This well was drilled to a depth of 1415 feet, and encountered several showings of both oil and gas, but was abandoned with the death of Dr. Fawcett in 1888. During this time a well was started on the Illinois River, near Tahlequah, but was abandoned when the Cherokee Council repealed their ruling. Near Eufaula, in what was then the Creek Nation, a third well was drilled, but this also failed to make a producer. It was carried to a depth of 2575 feet and abandoned. Showings of oil and gas were found at three different horizons.

Two Tests in 1894

After these three tests there were no further efforts to find oil or gas until in 1894, when the Cudahy Oil Company (Michael Cudahy, of Omaha, Nebraska) secured a lease on the Creek Nation and drilled two tests on the present Muskogee townsite. In one of these tests a good showing of oil was found at 1122 feet, but the well was drilled on down to 1800 feet and abandoned.

After this another test was drilled near Red Fork, which was abandoned as dry at a total depth of 1300 feet. It is reported that a good showing of oil was found around the 600-foot level.

About this time the Cherokee Oil & Gas Company, which had leased some acreage near Chelsea, completed several small wells at a shallow depth, around 400 feet, for a production of 5 to 10 barrels.

The material from the well near Red Fork was moved to a location which is now within the city limits of Bartlesville, and another test was started by the Cudahy Oil Company. In March, 1897, the well was drilled into the Bartlesville sand at 1200 feet, and after a small shot made 30 barrels.

On August 18, 1897, McBride, who had drilled the first well at Bartlesville, drilled a well four miles northwest of that city, on Butler Creek, which had a production of 20 barrels at 1350 feet. This was the first producer drilled in the Osage, and was followed in 1896 with a five-barrel well drilled by E. D. Foster, just south of the Kansas line.

June 25, 1901, Dr. Fred S. Clinton and Dr. J. C. Bland drilled in the first commercial pro-

KANSAS HAS BEEN PRODUCING OIL FOR ABOUT THIRTY-TWO YEARS

(Contined from preceding page.)

trist showed an initial production as high as 20,000 barrels.

It was in this field that the Gypsy Oil Company completed the largest well yet to be finished in the state. The company's number 5 Shumway came in for around 20,000 barrels a day, and produced a total of 2,250,000 barrels before it stopped flowing. The same company's number 13 Shumway also made a 20,000-barrel well.

As a result of the discovery of the Augusta and El Dorado pools and the development of the Towanda districts, the annual production of the state for the year 1918 was brought up to the high figure of 45,000,000 barrels.

Following in the wake of Butler County development, an extensive drilling campaign was launched which resulted in the discovery of a large number of other producing sections. In the fact of 1920, Greenwood County came into its own, and was getting considerable play. The Elbing, Peabody, Teeter, Fox Rush and other pools were beginning to show progress. The Covert-Sellars and Florence-Urschel fields of Marion County were opened with wells showing initial production of better than 4000 barrels. At the close of 1921 the last districts had reached their peak and were declining rapidly.

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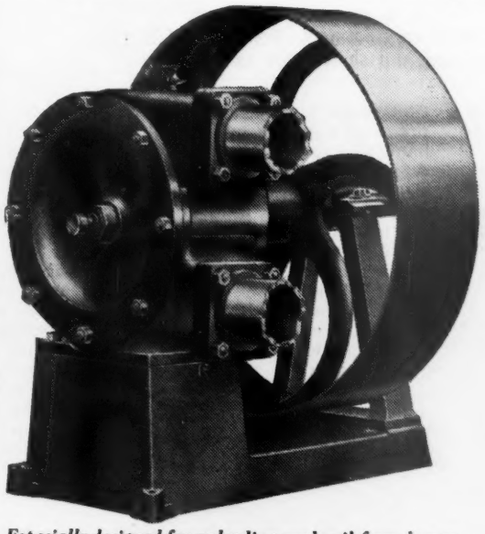

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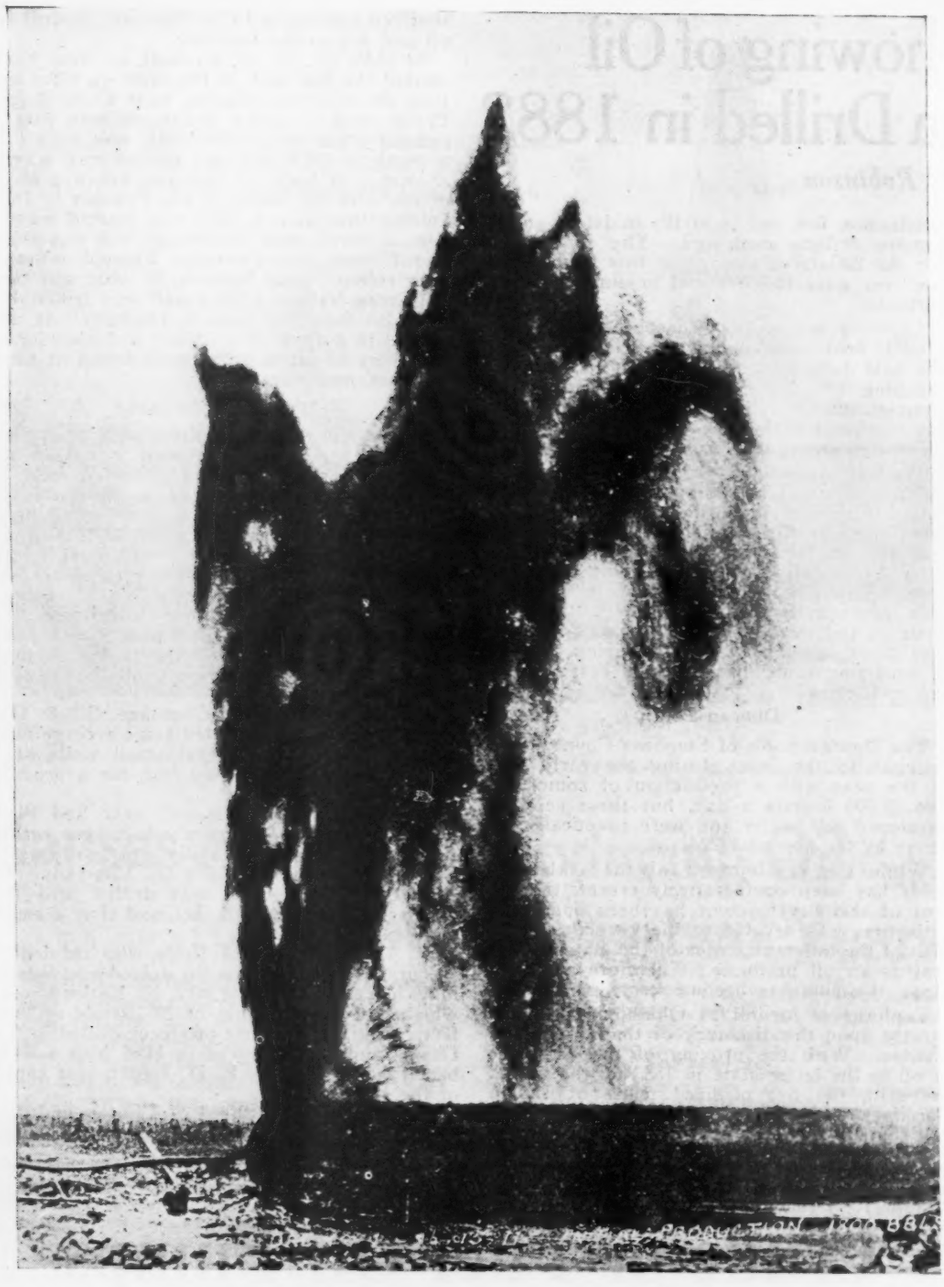

—Photo by Clarence Jack, Tulsa, Okla.

The H. F. Wilcox original well on the Drew allotment in 36-15-11, Okmulgee, opened up the present Wilcox sand and showed for 1200 barrels.

ducer at Red Fork on the Sue A. Bland allotment, in section 22-19-12. Sand was found at 1200 feet, which has since been named the Red Fork sand, and after swabbing the well flowed over the derrick. This well was probably rated better than it actually was; anyway, it received much publicity, and some operators say that it was the real beginning of the oil industry in Oklahoma.

Starting Real Work

Following this discovery and the approval of leases by the Secretary of the Interior, field work began to increase, and the first of 1905 found a good number of wells at Red Fork, Bartlesville, Muskogee, Chelsea, Cleveland, and in the Osage Nation. Early in this year the Bartlesville-Dewey pool was opened, and the shallow field was extended to Coody's Bluff.

It was in the summer of this year that Robert Galbrath and Frank Chelsey started work on a well on the Ida E. Glenn allotment, in section 10-17-12, which was completed the morning of November 22, 1905, with a production of 85 barrels at 1481 feet. This test, in proving a producer, saved its owners from bankruptcy, and opened the great Glenn pool. A month later number 2 was finished as a 700-barrel well, and the rush began. With the close of 1906 a number of wells had been completed which showed an initial of over 100 barrels each.

Starting 1907 with a daily production of about 12,500 barrels, the pool increased until October, when its maximum output was reached. During this month the field averaged approximately 82,000 barrels a day. With no pipe lines in the field and the lack of storage a large percentage of the oil was sold for a few cents, or lost by evaporation. With its peak reached in October, this field began to decline, and by the end of the year was producing less than 60,000 barrels a day.

Glenn Pool

With the opening of the Glenn pool The Texas Company and the Gulf both started the construction of pipe lines to the Gulf Coast. The Gulf line, an eight-inch one, was started January 13, 1907, at Watkins, in Glenn Pool, and was completed to the company's terminus at Sour Lake by August, 1907. Work on The Texas Company eight-inch line was started February, 1907, and completed January, 1908.

Following shortly upon the discovery of Glenn pool in 1906, the Wheeler pool near Ardmore was opened, and also a new district near Dewey, in the northern part of the state.

Development spread out more in 1908, and a gain was shown in the state's total production for that year.

In September, 1909, a good producer was completed about five miles north of Okmulgee, which made the original well for the Preston field. This was followed in 1910 with the bringing in of a producer near Henryetta, and also at Osage Junction, in the Osage, and the opening of a gas field at Poteau, in the eastern part of the state.

Following the development at Glenn Pool Charles B. Shaffer started a series of tests west of the field, in the hope of finding an extension or new field. After drilling four dry holes, located about five miles apart, direct west of the Glenn pool, he located his fifth well east of Cushing, and found 25-barrel production at 1450 feet, March 12, 1912. This was the beginning of the famous Cushing field, which has been designated the greatest light oil producing field in the world. The Shaffer well was drilled deeper, to a total depth of 2250 feet, where it made 120 barrels a day.

First Cushing Well

In December, 1913, the Prairie Oil & Gas Company drilled in the first well in the Cushing field as a Bartlesville sand producer, on the Fred Tucker farm. The well is located in section 3-17-17. Some wells completed in the pool in this sand showed an initial production between 10,000 and 12,000 barrels.

By 1904 the Cushing field had increased from 25,000 barrels a day to around 150,000 barrels, and at the close of that year was giving up more than 225,000 barrels every 24 hours.

The field covered a territory of approximately 12 miles square. The total output is estimated to be more than 245,000,000 barrels.

The Shamrock field, just south of Cushing, was opened in 1915 by Frank Fox, with a 300-barrel well in section 15-16-7. The well got its production in the Layton sand. In the southern part of the state the Red River Oil Company had discovered the Healdton pool in August, 1913, with a well making 75 barrels in 9-4s-3w. The Healdton field, while making one of the largest producers in the state, was kept in the background by the Cushing development.

In August, 1918, H. F. Wilcox drilled a well on the Drew allotment to a depth of 2600 feet which flowed at the rate of 1200 barrels until it caught on fire. This well is in 36-15-11, and was the real beginning of the deep drilling in this part of the state. Plenty of dry holes had been drilled near the Wilcox well, but they had all stopped after failing to find the Glenn sand around 2000 feet.

Early in 1919 The Texas Company completed a well on the Denny farm in NW 27-4s-2w, and the Hewitt field was opened. This field has proved one of the most prolific districts yet uncovered.

During the year following the state experienced much drilling work and numerous good pools were opened both in the northern and southern districts.

Okmulgee, Okla., Jan. 16.—Independent Oil and Gas Company of this place reported gross earnings for 1921 of $225,000 and total income from sale of oil during December approximated $60,0000. E. H. Moore has been elected president, J. W. McCullough, vice president, and T. D. Harris, secretary. These and J. J. Moroney, D. M. Smith, E. T. Noble and M. S. Graham compose the board of directors.

Arkansas

First oil in Arkansas came with the completion of Busey et al's No. 1 Armstrong, Section 31-17-15, Union County, near the town of El Dorado, the name which the field immediately took. In May of the year previous the Constantin Refining Company had completed a big gas well near the first oil well.

El Dorado proved a fertile oil deposit, although the sand is thin and water trouble soon developed. The rush of drilling ran production to 82,000 barrels daily for the final week of August of 1921. Daily production is now around 40,000 barrels daily.

Louisiana

Caddo

Oil production in North Louisiana dates back to 1905, when the Caddo field was opened. This oil field, still a fair producer, has had a varied career. The first production was from an 1100-foot horizon. Later drilling below 2,000 feet brought result. In the winter of 1919 and 1920 the Pine Island section, east of and adjoining the first Caddo field, developed a daily production of 40,000 barrels of heavy oil. This was short lived, as the pipe lines soon ceased to buy the oil.

Just now the field is being drilled to the Trinity sand at around 3000 feet, where some good wells of 45 gravity oil have been completed.

Bull Bayou

Production at Bull Bayou started in December, 1918, when the Bull Bayou Oil Company completed No. 1 Armistead in section 231-12-11. Production reached around 25,000 barrels daily in the latter part of 1919. The field has declined steadily since then and is now good for 7,500 barrels daily.

Homer

Homer is the bright spot of North Louisiana oil development. From its two sands it had a daily production of 95,000 barrels daily in April, 1920.

First production at Homer was found in the Consolidated Progressive Oil Comupany's No. 1 Shaw, 30-21-7, in the shallow sand at 1411 feet. This well was improperly handled and soon ceased to flow. In May three other small wells were completed.

Big things began to happen at Homer when the Standard Oil Company went down to the deep sand in No. 2 Oakes in August of that year. This well was estimated as high as 20,000 barrels. It was completed in the deep sand around 2,000 feet.

This deep sand promised well for a short time. Soon salt water came in, almost ruining the formation. It was from the shallow sand that the peak production at Homer came.

Haynesville.

The Haynesville field got its first well March 29, 1921, when the test of Smither, Palmer et al, was completed for 3,000 barrels at 2860 feet. Big interests, the Ohio Oil Company, the Gilliland Oil Company, the Louisiana Oil Refining Corporation and others soon took over most of the field.

For the final week of 1921, production at Haynesville had risen to around 40,000 barrels daily. The field is yet in its development.

Anse La Butte

Even before coming to Beaumont to complete the Lucas gusher at Spindle Top, Captain A. F. Lucas was striving to get oil in Louisiana. He was drilling at Anse La Butte in 1899. But the first production there dates back July 4, 1908.

Jennings

The Jennings pool of Southern Louisiana was put on the map late in 1901, when Heywood brothers completed the first well there. This field had some big wells. A few flowed as much as 15,000 barrels and there were many good for 8000 and 10,000 barels. The banner year was 1906 when total production was more than 9,000,000 barrels.

Vinton

The Vinton field of the Louisiana coastal region dates to June 25, 1910, when the Sabine Oil & Mining Company completed a 60 barrel well at 2230 feet.

The Edgerly field was brought in in 1911.

San Francisco, Jan. 15.—At the regular meeting of the Board of Dirtctors of the Standard Oil Company (California), held Jan. 10, A. B. Brooks was elected a director to fill the vacancy caused by the retirement of J. P. Smith. Mr. Brooks, for sixteen years, has been purchasing agent of the Standard Oil Company.

At the same meeting H. T. Harper was elected a vice president of the company, and J. H. Tuttle Secretary.

Mr. Brooks was born May 15, 1869, in New Bedford, Massachusetts, and moved to California in 1884, and in the same year he engaged as a common sailor before the mast on a whaling ship operating for the then Arctic Oil Works, which company was later absorbed by the Standard Oil Company. He worked in this capacity and as a common laborer until 1888, when he was made assistant foreman, and foreman in 1890. In 1895 he was appointed assistant superintendent of the Arctic Oil Works, and in 1902 became connected with the Richmond Refinery, where he worked until 1906, at which time he was appointed purchasing agent.

Tulsa, Okla., Jan. 16.—Advices received here from Independence, Kansas, are that G. F. McMahon, vice president of the National Supply Companies, has resigned as vice president of the Citizens National Bank there and that he is succeeded by W. S. Fitzpatrick, vice president of the Prarie Oil and Gas Company.

Mr. McMahon has removed to the general offices of the National Supply in Toledo, Ohio.

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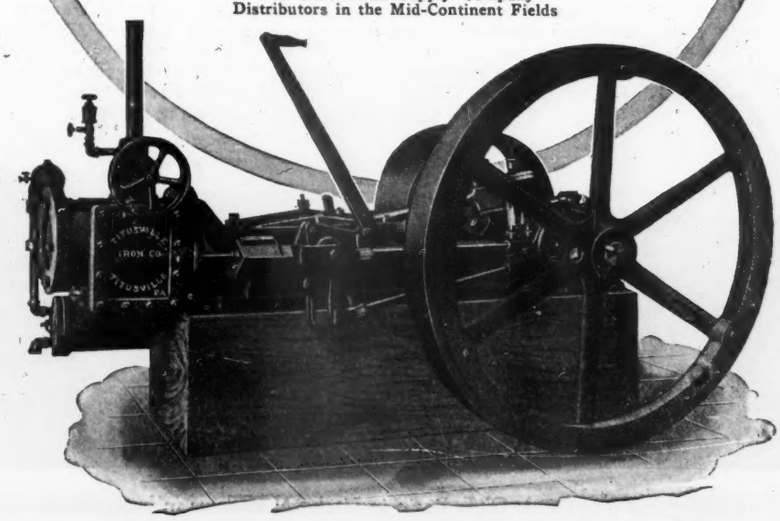

Rocky Mountain Region Has Much Oil

1500 producing wells in three states can produce 125,000 barrels daily—general review for 1921

By A. J. Hazlett

CASPER, WYO., Jan. 10.—Embraced in the Rocky Mountain Division are the oil and gas producing areas in Wyoming, Montana, Colorado, New Mexico and Utah as well as the prospective districts in the Dakotas, Idaho, Nevada and Arizona. Until very recent years, because of its remoteness from market, this region has not been in very high favor with the average operator. Even now it is an expensive territory in which to operate and necessarily is controlled by the more important interests.

War time prices and demand gave the territory a great impetus until in 1920 more than 18,000,000 bbls. of crude petroleum were produced in the three states of Wyoming, Colorado and Montana. In these three states, there are more than 50 districts in which oil is known to exist in commercial quantities and 40 of these are in Wyoming alone.

Production is obtained from strata in both the carboniferous and cretaceous ages. Anticlinal and dome structures are the most favored places of accumulation. Crude petroleum from the carboniferous strata range in gravity from 18° to 25° Baume, is of asphaltic base, and utilized chiefly for fuel; production from the cretaceous rocks ranges between 32° and 48° Baume, is of paraffin base and is good, refinable oil.

On January 1, 1922, there were approximately 1500 producing oil wells in Wyoming, Montana and Colorado with a potential daily output of not less than 125,000 bbls. However, the marketed production in the three states on that date was not more than 65,000 barrels a day. Besides the producing wells, there are not less than 300 wells in the three states that could produce large quantities of oil but they are shut in.

Most of the petroliferous territory in the Rocky Mountain region is under federal control which, until recently, has rather been a deterrent factor in operations. On April 1, 1921, it is estimated that there were approximately 500 drilling operations under way in the Rocky Mountain region, of which number 300 were in the proven districts and 200 were wildcats. On August 1, 1921, this number had probably been reduced to 250 in the proven districts and 100 wildcats. On December 1, 1921, the total number of tests drilling in the Rocky Mountain region was given as 814, of which more than 250 were in wildcat territory. In wildcat development, Montana is the most active with a big play being made in Utah and a number of widely scattered tests being drilled in Colorado. More than a dozen tests are also drilling in Nevada. The two Dakotas, Western Nebraska, Western Kansas, Idaho, Arizona and New Mexico each have one or more tests drilling.

In the pages which follow will be found more detailed information regarding the more important fields in the Rocky Mountain region.

Wyoming

Salt Creek.—Field is located 40 miles north of Casper and lies mostly in Ts. 39 and 40, Rs. 78 and 79. It is the largest field in the Rocky Mountain region, the producing area being estimated at 150 square miles. It was discovered in 1882 by P. M. Shannon, who drilled a number of wells about four miles north of the present development. The shallow sand in which these wells found the pay was called the Shannon Sand. Salt Creek proper was discovered in 1908 by the bringing in of a flowing well on Sec. 23-40-79 by Holland interests at 1052 ft. in the first Wall Creek sand. Oil was discovered in the second Wall Creek sand on Sec. 27-40-79 several years later about 260 ft. below the base of the first Wall Creek sand. In 1921, oil was discoverd in the Lakota sand in Sec. 25-40-78 by the Midwest Refining Company at 2640 ft. Field has about 300 producing wells, practically all flowing, with a potential daily production of 100,000 bbls. Pipe lines on August 1, 1921, were taking only 25,000 bbls. On December 20, 1921, they were taking about 55,000 bbls. Oil has a paraffin base and is very valuable for refinery purposes. Federal and State governments derive royalties from nearly all of the producing area. Salt Creek produced 10,222,845 bbls. in 1920. To date, the field has produced approximately 45,000,000 bbls. The potential production of the field before it becomes exhausted is estimated at 450,000,000 bbls.

Big Muddy.—Producing area is located principally in T. 33, R. 76, in Converse County, four miles west of Glenrock. It lies along the North Platte River and both the Northwestern and Burlington railroads traverse the field. It was discovered August 25, 1915, by the Humphries - Whiteside Syndicate, which brought in a 15-barrel well in the Shannon sand at 932 feet. Production from the first Wall Creek sand was obtained in 1916 at about 3000 feet. The deep wells are heavy producers. Field has about 325 producing wells. The average monthly production for 1920 was around 150,000 barrels. For the first six months in 1921, it was about 100,000 barrels a month. The total production in 1920 was 2,097,530 barrels. The oil has a paraffin base and is very profitable for refining.

Bolton Creek.—Field is in T. 29, R. 81, Natrona county, in the Bates Hole Country about 30 miles south of Casper. It was discovered in 1920 by the Poison Spider-Bolton Syndicate, which later changed its name to the Iowa-Wyoming Oil Co. The discovery well found the pay in the Sundance sand at 900 feet. Later the hole was drilled to the Embar sand at 2300 feet and the well made 350 barrels a day. Field has about a dozen producing wells that will make several hundred barrels a day. There is no pipe line connection and there are several thousand barrels in storage. It is a heavy black oil but it is claimed that it does not have an asphaltic base.

Byron.—Located principally in Park County, 44 miles northwest of Greybull. It was discovered in 1907. There are a few wells in the field producing a high gravity, light oil. See classification under "Gas Fields of Wyoming."

Dallas Field.—Development is in T.33, R. 2W in Fremont County, about 15 miles southeast of Lander. It is about one mile long and one-half mile wide. The early history of the field is recorded by Knight. It is probably the oldest producing field in Wyoming. There are printed references to its oil springs as early as 1833. The Anglo-American Oil Company, an English syndicate, began the active development of the field in 1907. There are 42 wells producing with an average daily production of 50 barrels. It is a heavy, dark brown oil with an asphaltic base. Field has pipe line connection to loading racks on the Northwestern railroad at Wyopo station near Lander.

Elk Basin.—Lies in two states—Wyoming and Montana. It was discovered in October, 1915, by a Thermopolis syndicate and soon after was taken over largely by the Ohio Oil and Midwest Refining companies. About 150 wells have been completed. Production in the first Wall Creek sand, 75 feet thick, is found at 1100 feet; in the second Wall Creek sand it is found at about 1350 feet with an average thickness of 40 feet. Several deep tests have been drilled to the Muddy and are big gassers. Field produces a good, refinable paraffin grade of oil. To the end of 1920 it had produced 4,704,297 barrels. In 1920 it produced 828,200 barrels. It has pipe line connection with refinery at Greybull.

Ferris Field.—Lies 25 miles north of Rawlins, principally in T. 26, R. 88, in Carbon County. It was discovered in 1918 by the Producers and Refiners Corporation. Wells range in depths from 2500 to 3500 feet. Average daily production of the 10 producing wells is about 500 barrels. Oil is of paraffin base. Outlet by pipe line to loading racks at Ft. Steele and Midwest refinery at Laramie.

Grass Creek.—Located near Kirby in T. 46, R. 98, in Hot Springs County. Producing area is about seven miles long by three wide.

Looking east into Circle Cliffs Basin in Utah. Note dome in background

Discovered in 1914. First well found the pay in the Dakota sand at 950 feet and had an initial output of 200 barrels. Ohio Oil Company in 1920 drilled to the Lakota sand at 1900 feet and found good producers. A heavy oil in the Sundance 60 feet above the Lakota was cased off. Field has 400 producing wells. The oil is of a paraffin base. Grass Creek produced 1,481,400 barrels in 1920. A 6-inch pipe line via Chatham connects the field with the Midwest refinery at Greybull. Line is about 85 miles in length and the longest gravity line in the world.

Hamilton Dome.—Structure is about 20 miles northwest of Thermopolis near the center of Hot Springs County, and has a proven area to date of about two square miles. It was discovered in 1919 by the Empire State Oil Company, the production being found in the Chugwater formation at depths from 1400 to 2300 feet. It has 21 producing wells with an average monthly output of 5000 barrels. The oil is of a paraffin base. It has a pipe line outlet through Grass Creek.

Hudson Field.—Located 10 miles east of Lander on the Northwestern railroad. It was discovered by Wm. Hudson and is one of the oldest fields in the state. It has about 30 shallow and eight deep wells. The shallow pay is found from 1200 to 1500 and the deep production from 2900 to 3200 feet. The average daily production is about 175 barrels. It is a heavy, black, asphaltic oil. The wells are owned by the Producers and Refiners Corporation and Wind River Oil & Refining Co., and are all operated by the first named company by electricity. It is the first district in the Rocky Mountain region to be operated by electrical power. The oil is marketed in tank cars.

Lance Creek.—Location is 30 miles north of Lusk, principally in T. 36, R. 65, Niobrara County. It was discovered March 18, 1917, by the Ohio Oil Company. The discovery well produced 80 barrels a day at 2689 feet. Later the Ohio drilled it down to the Dakota sand at 3500 feet and it flowed 5000 barrels the first 24 hours. Wells start in this field with big production but decline rapidly. In 1920 it produced 342,100; in 1919, 456,457 barrels. The daily production January 1, 1922, was about 750 barrels. The oil has a paraffin base and tests 43.5° on the Baume scale. Field is connected with loading racks at Lusk by a 6-inch pipe line owned by the Illinois Pipe Line Company.

Lost Soldier.—Field lies partly in three counties—Fremont, Carbon and Sweetwater, principally in T. 26, R. 90. It is about 30 miles northwest of Rawlins. It was discovered in 1918 by West & Hazlett, who are now operating in that district as the Bair Oil Co. Its proven area is about four miles square. It has 40 producing wells, one-half flowing and the remainder pumpers. The production in 1920 totaled 231,800 barrels. Average daily production in July, 1921, was about 1200 barrels. On January 1, 1922, it was 1700 barrels. The oil has a paraffin base and is of a good grade. Field is connected by 4-inch line of Illinois Pipe Line Company with loading racks at Ft. Steele and the Midwest Refinery at Laramie.

Maverick Springs.—Located chiefly in T. 5, R. 2, in Fremont County, about 40 miles northwest from Riverton It consists of twin structures, Big Dome and Little Dome, the two having a combined area of 10 square miles. To the northwest is Circle Dome with an area of four square miles, discovered in the winter of 1917-18. Has about 20 wells capable of producing about 1200 barrels a day but there is no pipe line outlet. Depths of wells range from 1200 to 1400 feet. Both Embar and Tensleep sands are productive. It is a heavy, black, asphaltic oil. Recently the Union Oil Company of California has taken over the principal interests in the field and will lay a pipe line to rail connections.

Mule Creek.—Lies in northeastern part of Niobrara County, principally in T. 40, R. 61, four miles from the state line and 12 miles west of Edgemont, S. D.; producing area covers about five square miles. It was discovered in 1919 by the Ohio Oil Company. Depths of wells range from 800 to 1500 feet. Dakota sand produces a light, paraffin oil and Muddy sand produces a heavy asphaltic oil. Heavy oil is cased off but will pay to develop in the future. There are about 150 producing wells. Production in 1920 totaled 81,900 barrels. Average production for 1921 has been around 18,000 barrels a month. Oil is piped to Dakoming, a small station on the Burlington railroad 19 miles from the field. See U. S. Geological Survey Bulletin 716-C.

Plunkett.—Location is about 13 miles northeast of Lander in Fremont County. The producing area is very small and consists of only about 40 acres. It is one of the oldest fields in Wyoming. There are 14 producing wells ranging in depths from 40 to 150 feet. They start with an initial production from 20 to 50 barrels and settle down to one borrel. Oil is of the best quality with a high gasoline content. Field has no pipe line connection. Control of field has recently been taken over by a Seattle company which conveys the oil in trucks to Lander, where it is refined and products disposed of locally.

Moorcroft.—Field is on the extreme western edge of the Black Hills uplift, chiefly in T. 52, Range 67, in Crook County, 12 miles north of Moorcroft. Its oil springs were known early in the nineteenth century but no attempt was made to develop the district commercially until 1887. About 60 shallow holes have been drilled since that time and several fairly deep tests. The shallow wells yield from a few gallons to five barrels; the deeper tests have failed to find oil in commercial quantities. Shallow holes produce two kinds of oil—one asphaltic and one paraffin. Until recently about a dozen wells, equipped with hand pumps, averaged about five barrels each daily. See U. S. G. S. Bul. 581.

Osage.—Located in Weston County, about 10 miles northwest of Newcastle. It was discovered in 1920. Produces from the Muddy sand at about 100 feet. Shallower wells in stray sands. No deep production so far, although number of deep tests drilling. About 150 wells with daily production of 600 barrels. Good, refinable, paraffin base oil. Pipe line connection with loading racks at railroad.

Pine Mountain.—Lies about 30 miles west from Casper and is in Natrona County. It was discovered in 1919 by the Mosher Oil Company. Probable producing area about seven square miles. Two wells producing small quantities of oil and one gas well have been completed and one test is under way. Wells are producing from the Sundance and Embar sands from 2200 to 2600 feet. Oil is almost a natural lubricant and suitable for greases and vaseline. Field has no pipe line outlet.

Poison Spider.—Located about 20 miles west of Casper. Discovered in 1918 by the New York Oil Company. Production is principally gas which is piped to Casper. Several wells in the district produce oil. Iron Creek and Oil Mountain, nearby structures, are controlled chiefly by the New York Oil Company and both produce some oil and considerable gas. Pay sands are found from 800 to 2800 feet. See U. S. G. S. Bul. 641-I.

Rock River.—This field is located on both sides of the county line between Albany and Carbon Counties and is principally in T. 20, R. 78, about six miles south of the town of Rock River. It is a long, narrow structure about three miles long and three-fourths of a mile wide. It has 25 producing wells with an average daily production of 6000 barrels. It is a good, refinable oil with a paraffin base. The average depths of the wells is 3000 feet. Field was discovered in 1918 by the Ohio Oil Company. Has pipe line connections with loading racks at Ft. Steele and the Midwest Refinery at Laramie. It is controlled by the Ohio Oil Company. In 1920, it produced 1,355,600 barrels.

Tisdale.—Located in the Powder River country in T. 40, R. 81, in Johnson County, about 20 miles northwest from the Salt Creek field. It was discovered in 1919. Has three shallow wells producing a paraffin base oil from the Sundance and Dakota sands. Depths of wells from 100 to 600 feet with an average production of 25 barrels. Producing area is estimat-

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ed at seven square miles. No outlet for production.

Warm Springs Domes.—Field consists of two domes, East and West Domes, four miles east of Thermopolis in Hot Springs County. Field was discovered by Dr. Carter in 1917. Production is from the Chugwater formation in depths from 1000 to 1800 feet. It is a heavy, asphaltic, dark brown oil. Outlet through 4-inch pipe to Thermopolis. About 20 wells have been completed with an average daily production of 600 barrels.

Montana

Cat Creek.—Is located principally in Ts. 15 and 16, R. 29, in Eastern Fergus County. It was discovered February, 1920, by the Frantz Corporation. Pay is found between 1300 and 1400 feet in the Kootenai. East dome has an area of about 8 square miles, and West dome two square miles. On January 1, 1922, there were 62 producing wells with a daily production of 3000 barrels. The oil tests 46° on the Baume scales and is very high in gasoline content. Two pipe line systems connect the field with loading racks at Winnett.

Elk Basin.—Located in southern part of Carbon County on the state line between Montana and Wyoming. See "Oil Fields of Wyoming."

Devil's Basin.—Lies principally in Musselshell County, but extends over into Southern Fergus County. Discovered in 1919. Has three wells producing a black, asphaltic oil, the pay being found from 1200 to 1700 feet. Wells will average about 25 barrels. No pipe line outlet.

Porcupine Dome.—Is in Rosebud County. Discovered in 1921. Stellar Oil Company is reported to have a small well in its No. 4 test at 1450 feet. It is black oil with asphaltic base.

Soap Creek.—Lies in the Crow Indian Reservation in Big Horn County, about 20 miles southwest of Hardin, principally in T. 6, R. 32. It was discovered in February, 1921, by the Western States Oil & Land Company. The first well had an initial production of 500 barrels and found the pay at 1640 feet. A second well came in flowing 2500 barrels. It is a heavy, black, asphaltic oil. No pipe line outlet although survey for line eight miles long to new railroad spur is reported to have been made by Illinois Pipe Line Company.

Colorado

Florence.—Situated in Fremont County near the center of the state. It is an old producing district and to date has produced more than 5,000,000 barrels. In 1908, its output was about 300,000 barrels, but in 1920 the production was less than 100,000 barrels. There are about 300 producing wells with a combined daily average of about 325 barrels. The oil is found at comparatively shallow depths from 1000 to 2000 feet. It is a high gravity, good, refinable oil. The oil is refined locally in the works of the United Oil Company, a complete refinery controlled by Standard interests.

Boulder.—This district is in Boulder County, near Denver. It has been producing in a small way for a number of years. The oil is found in the shale at shallow depths. In 1917, the total production was less than 6000 barrels. Oil was formerly refined locally by the Apex Refining Company. In 1920, there were a dozen wells operated with a combined daily average of about 15 barrels. They have not been operating since early in 1921.

Rangeley.—Is located in Northwestern Colorado in Rio Blanco County. It is an old producing district. The oil is found at various shallow depths. There are about 50 producing wells with a combined daily output of 100 barrels. The oil is refined locally by the Raven Oil & Refining Company and is high gravity, paraffin base.

Utah

San Juan.—This district lies in San Juan County in the southeastern corner of the state. About 10 years ago, a number of shallow wells were drilled, several developing an initial production as high as 100 barrels. They soon settled down, however, to small pumpers. Owing to its remoteness, field never was developed. In the present year, several interests have secured acreage in the oil field and are now drilling. It is a high gravity, paraffin oil.

Virgin River. — Located in Washington County in the extreme southwestern part of Utah. Oil springs have been known to exist in this locality for a number of years but only in the past three years has there been any systematic attempt to develop the field commercially. There are about 10 wells producing from shallow depths. The oil has a paraffin base and is refined locally by the Dixie Oil Company.

Rocky Mountain Pipe Lines

As yet there is no connected system of pipe lines in the Rocky Mountain oil region. There are a number of individual lines connecting different fields to loading racks at nearby railroad points and with local refiners, but there is no trunk line with seaboard outlet like there is in the Mid-Continent, Gulf Coast, Eastern States and California. While there is no connected trunk line system, there are three pipe line centers in Wyoming, with a number of isolated lines in Wyoming, Colorado and Montana.

The three centers are Graybull, Casper and Laramie. At Greybull, lines connect the Midwest refinery with Elk Basin, Grass Creek and Hamilton Dome. At Casper, a number of lines connect refiners at Casper and Glenrock with the Salt Creek and Big Muddy fields. At Laramie, pipe lines connect the Midwest re-

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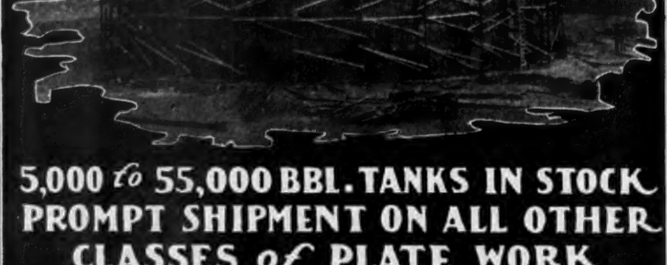

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finery with the Rock River, Ferris and Lost Soldier fields.

In what follows is listed the different fields showing their pipe line connections:

Big Muddy

Illinois Pipe Line Co.—Company has 21 miles of 8-inch pipe line from the east end of the Big Muddy field to Casper. It has 2½ miles of 3-inch pipe line from the Big Muddy pump station to the Mutual Refining Company's works at Glenrock.

Brenning Basin

Wyatt Oil & Refining Co.—Company has about four miles of 4-inch line from Brenning Basin to a small refinery at Fort Fetterman. It was laid in 1918 and 1919, but has never been used. Practical pipe line men say that it has never been completed and that the part that has been put together is not practical.

Byron Field

Allen Oil C.—Oil production in the Byron Oil field is transported to Lovel through eight miles of 3-inch pipe line owned by the Allen Oil Company.

Dallas

Anglo-American Oil Co., Ltd.—Line was laid in 1917. It consists of 6-inch pipe and connects the Dallas field with loading racks on the Northwestern railroad at a small station near Lander called Wypo.

Elk Basin

Illinois Pipe Line Co.—From Elk Basin field to Frannie the company has 13 miles of 6-inch pipe line. At Frannie Junction, five miles west of Frannie, the company has 55 miles of 6-inch line to Greybull. At Cowley Junction, a 6-inch lateral branches off to the Cowley refinery, a distance of about 10 miles.

Grass Creek

Illinois Pipe Line Co.—Field at Grass Creek is connected by company with an 8-inch line to Chatham, a distance of 30 miles. From Chatham to the Greybull refinery, a distance of 50 miles, it is a 6-inch line. This is said to be the longest gravity line in the world.

Ohio Oil Co.—Has 30 miles of 3-inch welded line from its casing-head gasoline plant at Grass Creek to a 3000-barrel tank at the Burlington railroad at Chatham.

Hamilton Dome

Illinois Pipe Line Co.—Hamilton dome field is connected with the Illinois Pipe Line Company's Grass Creek line by about 14 miles of 6-inch pipe.

Mule Creek

Illinois Pipe Line Co.—Company has five miles of 8-inch gravity line from the field to the pump station and then 14 miles of 3-inch line to loading racks at Dakoming station on the Burlington railroad. Line was laid in 1920.

Osage

Illinois Pipe Line Co.—Production from the Osage field in Weston County is conveyed to Clay Spur on the Burlington railroad, a distance of five miles, through a 3-inch line, by the Illinois Pipe Line Company.

Pilot Butte

Illinois Pipe Line Co.—Connecting the Pilot Butte field with loading racks at Riverton, the Illinois Pipe Line Company has a 3-inch line approximately 30 miles long. It was laid in 1918.

Rock River

Illinois Pipe Line Co.—System connects Lost Soldier and Ferris districts with the Midwest Refinery at Laramie. From the Lost Soldier field to Midway station in Separation Flats, it has 21 miles of 4-inch. From the Ferris field to the Midway station, it has 14 miles of 6-inch line. From the Midway station to Fort Steele, it has 21½ miles of 4-inch and also a 6-inch parallel line. From Rock River field to loading racks at Rock River, company has 10 miles of 6-inch line and from the Rock River field to Laramie, it has 38 miles of 6-inch line.

Salt Creek

Midwest Refining Co.—Has six 6-inch lines from the Salt Creek field to Station No. 1 at Teapot, and two 6-inch and two 8-inch lines from the Teapot station to its tank farm near the refinery site at Casper, the total distance being approximately 40 miles. It also has one 3-inch welded line from its casing-head gasoline works at Salt Creek to its refinery at Casper.

Natrona Pipe Line Co.—This was the first oil pipe line in Wyoming. The first unit was laid in 1902 and consisted of about four miles of 4-inch from the Shannon shallow pool, north of Salt Creek, to the camp of the Holland (Dutch) Company at Salt Creek proper. From this camp to Casper, it consisted of 6-inch pipe. The 6-inch was laid in 1913 and a year later it was taken over by the Midwest Refining Company.

Western Pipe Line Co. — Survey for an 8-inch line from the Salt Creek field to Casper was made in 1921. Up to January 1, 1922, no construction work had been started.

Torchlight

Midwest Refining Co.—Torchlight field outlet is a 3-inch line to Greybull by the Midwest Refining Company.

Warm Springs

Alliance Oil & Refining Co.—This company has nine miles of 4-inch pipe line from the Warm Springs field to its refinery at Thermopolis.

Montana

Cat Creek

Elk Basin Consolidated Petroleum Co.—Early in 1920, this company laid a pipe line from the Cat Creek field to Winnett, a railroad station on the Milwaukee railroad, a distance of about 22 miles. The line at first consisted of two 2-inch units for par of the way and a 4-inch line the rest of the distance. The line was made all 4-inch early in 1921.

Montana Independent Pipe Line Co.—This company has a 6-inch line laid from the Cat Creek field to loading racks at Winnett. Line was completed in the spring of 1921. It started running oil to Winnett December 3, 1921.

Mountain States Refineries

Big and little, on January 1, 1922, there were 30 refineries either in operation, standing idle or in course of construction in the Rocky Mountain region. These 30 refineries had on that date a combined total charging capacity of 114,500 barrels. As in the production of crude petroleum, Standard interests predominate in the refining industry in the Rocky Mountain region. October 1, 1921, Standard Oil Company of Indiana took over the control and operation of all the plants listed below as belonging to the Midwest Refining Company.

Following is a list of the principal petroleum refineries operating in the Rocky Mountain region:

Wyoming

Midwest Refining Co.—Located on the western edge of Casper on both sides of the North Platte River. Construction work begun in 1914. Took over Franco-Wyoming Petroleum Company's plant of four 750-barrel stills in 1915 and moved it from the east side of Casper to Midwest location on west side of town. Added wax plant in 1919 capable of handling 1500 barrels of wax distillate every 24 hours. Has charging capacity of 55,000,000 barrels. Direct shipping facilities with both the Burlington and Northwestern railroads.

Midwest Refining Co.—Located at Greybull on the Big Horn River. Built in 1914. Has a charging capacity of 10,000 barrels. Connected with the works is a 78-car capacity loading rack on the Burlington railroad, an absorption gasoline plant, acid plant and six cooking stills. Operates on Cat Creek and North Wyoming crudes.

Midwest Refining Co.—Located at Laramie on the Big Laramie River and the Union Pacific railroad. Built in 1919. Charging capacity 10,000 barrels. Runs on Lost Soldier, Ferris and Rock River crudes. Skimming plant.

Standard Oil Company of Indiana.—Located at Casper adjoining works of the Midwest. Takes distillates and residuum from Midwest plant, and recracks it. Capacity 20,000 barrels.

Standard Oil Company of Indiana.—Adjoins works of Midwest at Laramie. Recracks distillates and residuum from Midwest plant. Capacity, 5,000 barrels.

Standard Oil Company of Indiana.—Adjoins

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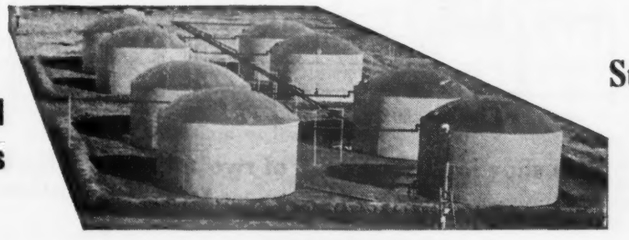

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works of Midwest at Greybull. Recracks distillates and residuum from Midwest plant. Capacity, 2,000 barrels.

Standard Oil Company of Indiana.—Adjoins works of Mutual Refining Company at Glenrock. Is now building. Will recrack distillates from Mutual's plant. Initial capacity, 2500 barrels.

General Petroleum Corporation.—Located at Lovell in north Wyoming on tributary of the Big Horn River and the Burlington railroad. Built in 1919. Topping plant. Operates on crudes from Byron, Elk Basin and Cat Creek fields. Charging capacity, 500 barrels.

McWhorter-Osage Refining Co.—Located at Lusk on Northwestern railroad and Niobrara river. Built in 1918. Skimming plant. Charging capacity, 250 barrels. Built to run on Lance Creek crude. Has never been in operation.

McWhorter Oil & Refining Co.—Located at Osage on the Burlington railroad. Built in 1920. Skimming plant. Runs on Osage crude. Charging capacity, 250 barrels.

Alliance Oil & Refining Co.—Located at Thermopolis on Big Horn River and Burlington railroad. Built in 1918. Topping plant. Charging capacity, 1500 barrels. Runs principally on crude from Warm Springs field with which it is connected by 15 miles of 3-inch pipe line.

Northwestern Oil Refining Co.—Located at Cowley on the Burlington railroad. Built in 1918. Skimming plant. Charging capacity, 750 barrels. Uses Byron and Elk Basin crudes.

Mutual Refining Co.—Located at Glenrock near Casper. Is on the North Platte River and the Burlington and Northwestern Railroads. Built in 1919. Skimming plant. Charging capacity of 7500 barrels. Runs on Big Muddy and Salt Creek crudes. Control passed to Elk Basin Consolidated Oil Company in 1921. Now being enlarged to charging capacity of 10,000 barrels.

U. S. Oil & Refining Co.—Located at Moorcroft on the Burlington railroad. Partly completed. Construction work suspended. Skimming plant. Charging capacity, 250 barrels.

Riverton-Wyoming Refining Co.—Located at Riverton on the Wind River and the Northwestern railroad. Built in 1918. Skimming plant. Capacity, 500 barrels. Operates on Hudson, Dallas and Pilot Butte crudes. Recently sold to local bank at Riverton to satisfy judgment for debts. (Idle.)

Wind River Oil & Refining Co.—Located at Lander. Built in 1918. Is on Popo Agie River and Northwestern railroad. Skimming plant. Capacity, 750 barrels. Operates on Hudson and Dallas crudes. (Idle.)

Wyatt Oil & Refining Co.—Located at Fetterman on the North Platte River and the Northwestern railroad. Skimming plant. Capacity, 500 barrels. Connected with Brenning Basin field by four miles of 4-inch pipe line. (Idle.)

Ohio Oil Co.—Located in Grass Creek field. Built in 1920. Topping plant for obtaining gasoline to mix with compressor stock so as to ship without loss through evaporation. Has two stills and runs daily about 300 barrels of gasoline blend. Cuts about 8 per cent of crude used and remainder is turned back into regular pipe line.

Wyoming Refinery Co.—Recently incorporated with authorized capital of $10,000,000. Has purchased refinery site of 420 aces three miles east of Casper. Officials of company announce will build 5000-barrel plant this year and connect it with pipe line to Salt Creek field.

Southwest Oil Co.—Located near Thornton. Built in 1917. Plant consists of small upright boiler used as still. It was formerly used for heating sheep dip. Capacity, 10 barrels. Runs on shallow wells from Wakeman field in Crook County. Output sold locally.

Colorado

Apex Refining Co.—Located at Loomis Station on the Colorado & Southern railroad, near Boulder. Built in 19—. Skimming plant. Operates on crude from nearby shallow wells and tank car shipments. Capacity, 250 barrels. Said to have been leased recently by the Monarch Shale Oil Co., and that it will be converted into a refinery for shale oil products.

Raven Oil & Refining Co.—Located at Rangely in northwestern part of state. Built in 1920. Skimming plant. Runs on crude from nearby shallow wells. Charging capacity, 200 barrels. Output sold locally.

United Oil Co.—Located at Florence on the Denver & Rio Grande railroad. Built in 19—. Charging capacity 1500 barrels. Operates on crude from Florence field and tank car shipments from Wyoming. Complete refinery.

Montana

Great Northern Refining Co.—Located at Lewiston on the Chicago, Milwaukee & St. Paul railroad. Skimming plant. Capacity, 500 barrels. Operates on Cat Creek crude.

Miles City Refining Co.—Located at Miles City on the Northern Pacific railroad. Skimming plant. Charging capacity, 1000 barrels. Operates on Cat Creek crude.

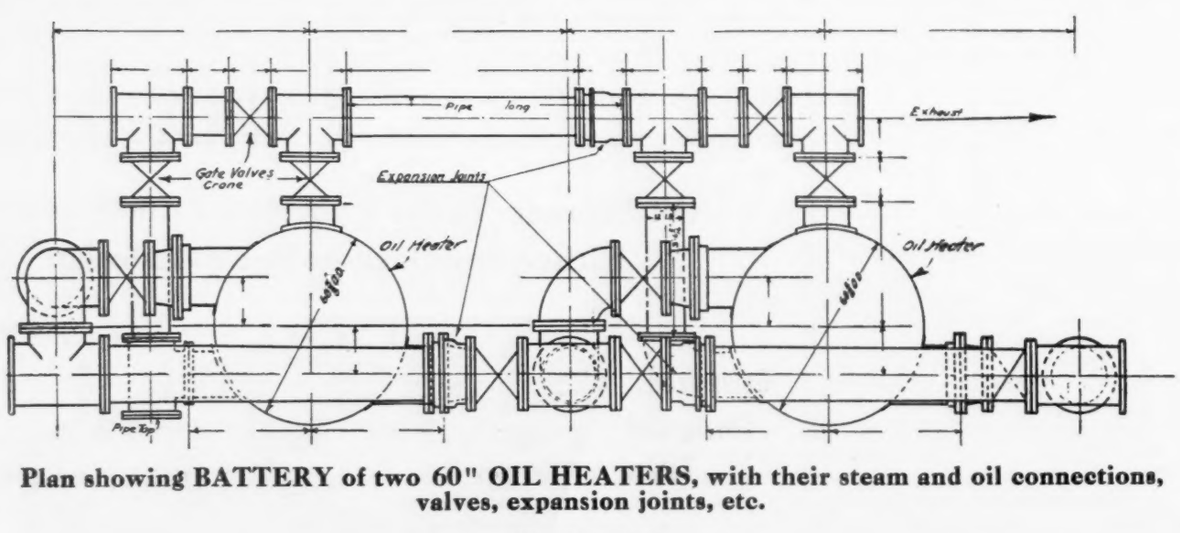
Montana Refining Co.—Located at Billings on the Northern Pacific railroad. Skimming plant. Capacity, 500 barrels. Operates on Cat Creek crude.

Arro Oil & Refining Co.—Located at Lewistown on the Chicago, Milwaukee & St. Paul railroad. Skimming plant. Capacity, 1500 barrels. Operates on Cat Creek crude.

Utah

Utah Oil & Refining Co.—Located at Salt Lake City. Built in 19—. Wax plant in connection. Charging capacity, 4500 barrels. Complete plant. Crude supply in tank cars from Wyoming fields. Subsidiary of Midwest Refining Co.

Dixie Oil Co.—Located at Virgin in southwestern Utah. Completed in 1921. Skimming



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Natural Gasoline Industry in Rocky Mountain Region

Although the natural gasoline industry was introduced in the Rocky Mountain region very recently compared with other fields, it has made rapid strides. There are probably a dozen plants for the recovery of gasoline from natural gas now operating in the territory with half as many more under construction.

Following is a partial list of the more important plants for the recovery of gasoline from gas in Wyoming:

Midwest Refining Co. — Located at Salt Creek in Natrona County. Fed by gas lines connected with wells in central part of the field. Plant said to be one of the largest in the world running through compressors approximately 25,000,000 cubic feet daily. Gasoline is conveyed from Salt Creek to Midwest Refinery at Casper through 3-inch welded line where it is blended with low grades of refinery gasoline.

E. T. Williams Oil Co.—Small Bessemer compressor plant at Salt Creek. Handles about 1,000,000 cubic feet of gas daily.

Wyoming By-Products Co.—Located at Salt Creek. Operates on gas from Ohio and New York oil companies' wells. Absorption plant with capacity of 10,000,000 cubic feet gas daily.

Armstrong Gasoline Co. of California.—Located at Rock River oil field. Uses about 2,500,000 cubic feet of gas daily from wells of the Ohio Oil Company. Uses new process of distillation that does not require any steam. Averages about 400 barrels a week. Product transported through 2-inch welded line to loading rack at Rock River, distance of six miles.

Ohio Oil Co.—Located at Grass Creek oil field. Compressors turn out very gassy product which has to be blended with tops from crude in field before shipment through 3-inch welded line to loading racks at Chatham on the Burlington railroad, a distance of 28½ miles. Mixture is run through line at about 65° fluid.

Lovell Gas & Electric Co. — Located at Lovell. Built in 1920. Uses ammonia compression process for freezing the gasoline out of the gas that goes through the line to Lovell. Has 20-ton ammonia compressor. Electric drive furnished by transmission line from Lovell Electric plant. Output about 1000 gallons daily.

Hope Gas Co.—Located at Cowley on the Burlington railroad. Built in 1919. Uses seal oil process. Oil absorbs the gas which is then distilled for the gasoline and the oil is used over and over again. Gas averages about three-tenths gallon per 1000 cubic feet.

Ohio Oil Co.—Located in central part of Lance Creek oil field. Construction was started in 1918 but plant was never completed as the big gassers gave out. Foundations were in and part of the machinery on the ground.

Midwest Refining Co.—Located at Elk Basin. Compressor 3-unit plant. Handles about 10,000,000 cubic feet daily. Gasoline transported through 2-inch welded line to Burlington railroad at Frannie.

Rocky Mountain Natural Gas

Considering the tremendous quantities of developed and undeveloped natural gas resources in the Rocky Mountain region but little commercial use has been made of this valuable natural product to date. Some of the largest natural gas wells in the world with the highest known rock pressure have been discovered in Wyoming.

Montana has at least three commercial natural gas fields to which may be added four new fields discovered in 1921. No data is given here on these fields because of the limited time at hand and difficulty in securing same. Colorado has several small fields developed locally and great gas possibilities. The same is also true of Utah.

In Northern Wyoming, the people in a number of municipalities are supplied with natural gas for domestic and commercial consumption. It is also used as fuel in the more important refineries in Northern Wyoming. Casper is supplied with natural gas for both domestic and commercial consumption by the New York Oil Company, the supply being derived mainly from the Poison Spider district. The refineries at Casper, alone consume more than 15,000,000 cubic feet daily, furnished by this company.

About the middle of December the Producers & Refiners Corporation and the Midwest Refining Company completed a 90-mile pipe line from the Lost Soldier-Mahoney Dome-Ferris fields in Carbon County, Wyoming, to Casper. The line is now delivering a minimum of 30,000,000 cubic feet daily to the Standard refineries at Casper. First 18 miles at field end is 10-inch; then 30 miles of 12-inch and 42 miles of 14-inch.

The Producers and Refiners Corporation has a 6-inch line from Big Sand Draw to Riverton and will install a compressor plant for the recovery of gasoline from the gas at the Riverton end of the line. It is planned to extend this line on to Lander in 1922. Its total length will then be about 45 miles. It is now 21 miles.

A detailed report of some of the more important gas fields of Wyoming follows:

Buffalo Basin.—Lies in T. 47, R. 100, about 600 miles northwest of Thermopolis in Park and Hot Springs counties. Discovered in 1917. Gas sand found at about 2500 feet. Average open flow estimated at 25,000,000 cubic feet. Had one well on fire several months in 1920. No outlet for gas.

Byron—Located in T. 55, R. 98, 44 miles north of Greybull in the Big Horn Basin, in Big Horn County. Discovered in 1907. Gas sand found around 2800 feet. Average rock pressure, 400 pounds and average open flow, 5,000,000 cubic feet. Gas supplies Lovell and nearby towns.

Big Sand Draw.—Located in T. 33, R. 95, about 23 miles southeast of Riverton in Fremont County. Covers about 12 square miles. Discovered winter of 1917-18 by Producers & Refiners Corporation. Gas found in Wall Creek from 2500 to 3000 feet. Field has five wells that will average 10,000,000 cubic feet each. All are connected with 6-inch line from the field to Riverton. Gas very rich in gasoline. See United States Geological Survey Bulletins 641 and 711-T.

Mahoney Dome.—Located principally in T. 26, R. 88 between the Lost Soldier and Ferris oil fields, about 28 miles north of Rawlins, in Carbon County. Discovered in 1919 by West and Hazlett. Ohio Oil Company has two wells and Kasoming Oil Company two wells. Capacity of each about 20,000,000 cubic feet with 1000 pounds rock pressure. Gas sand found around 2900 feet. Field probably covers a large area. Wells are shut in. Before the war, a movement was on foot to pipe the gas to Denver, a distance of 160 miles.

Oregon Basin. — Located in T. 51, R. 100, about 15 miles southwest of Cody, in Park County. Field is about 15 miles long and six miles wide. Discovered in 1914 by Enlapac Oil Company. Up to 1920, nine wells had been drilled of which three were gassers and six were failures. Gas is found in Cloverly sand at about 2150 feet. Wells average about 5,000,000 cubic feet with a rock pressure of 850 pounds. Shut in.

Sage Creek.—Located in T. 2, R. 1 of Wind River Survey, 27 miles northwest from Lander in Fremont County in the Indian reservation. One well, completed by Belgian interests in 1920. Will make about 3,000,000 cubic feet. Gas was found in the Morrison sand. Well is shut in.

Wertz.—Located in section 7-26-79, in Carbon County, about three miles northeast of the Lost Soldier oil field. Discovered in 1920 by the Producers and Refiners Corporation. One well estimated at 40,000,000 cubic feet and a rock pressure of 1800 pounds. Depth, 3410 feet. Gas pipe to Lost Soldier oil field and used for fuel under drilling boilers. Now connected with Casper line.

Poison Spider.—Located 20 miles west of Casper. Discovered in 1918 by the New York Oil Company. Has potential production of about 100,000,000 cubic feet. Average daily consumption through Casper line in 1920 was 19,000,000 cubic feet. Field connects with Casper by seven miles of eight-inch line, ten miles of ten-inch line and 12 miles of 12-inch line with eight miles of gathering lines and 26 miles of distributing lines.

Elk Basin.—Ohio Oil Company completed a 7-mile pipe line in December, 1921, from Elk Basin to Billings, Montana. Line passes through several small towns en route. Line starts with six-inch at the field and ends with ten-inch.

NO-CO-RO Long Drops and Seats Make Wonderful Record

Patent Applied for

Mr. William Hurd, field superintendent for the Central Refining Company, at Robinson, Illinois, reports great success in use of NO-CO-RO Drops, Seats and Crowns—cutting pulling expense on bad wells to one-tenth of former cost.

Mr. Hurd tells us of one well in particular, which was formerly pulled on an average of once a week to replace balls and seats. NO-CO-RO Drops and Seats were placed in this well last April and are still pumping at this time.

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They are guaranteed to cut your pulling expense at least 50 per cent.

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Fishing Jobs Require Maximum Ingenuity

Herewith given some interesting data on the cussedness of a hole in the ground

By J. Kent Ridley

Fishing has a wide relation to the oil industry.

Years ago the fisherman were the oil men. Then the wildcatter went forth in his trusty boat into the frozen north to get the whales that furnished oil for light and lubrication, and the less venturesome oil producer who stayed in the proven territory caught the smaller fish in his seines and turned in another class of crude to the refineries.

Discovery that petroleum was the proper article for these purposes, for a time made it appear that fishing would not play such an important part. But as wells went deeper and the holes became more costly, it was discovered that the real grief of the industry was to remain associated with fishing.

One does not have to remember back even as far as his Sunday School days to know what the preacher's opinion is of fishing—on Sunday. The reverend gentlemen have overlooked one class of fishing that is just as damning week days as Sundays, with the site a few hundred feet nearer hell.

OF all the jobs of industry requiring inventive genius and patience, fishing for lost tools and equipment in oil wells is the most exacting. Also the delays incident to the fishing operation and the cost of labor and material required to recover the lost parts in the aggravated instances, is of such expense as to have a large bearing upon production costs.

Much of the improvement in drilling methods that has taken place during the last few years has been incident to devising ways and means of correcting the results of accidents in the depths of the earth. And while inventors have been busy making and improving appliances for catching lost tools and casing, and such appliances are stocked by supply houses, the individual fishing job generally presents an individual problem. This condition requires that the driller be of an inventive mind himself, as well as possessed of patience equal to Job's, and in some instances it becomes necessary to design and construct special tools to handle the problem in hand, in spite of the numerous ingenious appliances that can be had from the supply men.

Cable tool drilling might well be considered as more productive of fishing problems, because the applances used present all the possibilities of trouble present with rotary equipment with the addition of the possibility of the cable parting from any number of causes. Tools provided for fishing in cable tool wells include numerous types of spears for catching the broken cable, but these instruments very often are not equal to taking a hold on the cable that is equal to the strain required to lift the tools. Especially is this true when the trouble in the first instance resulted from the tools being stuck. When the spear will not stand the strain, the rope is cut off and the tools caught with other tools of the required strength. For cutting the cable a special knife is provided.

Slip Sockets

Slip sockets are commonly used to recover strings of lost tools or a lost bit, jar or stem. Ordinarily the slip socket will take hold readily if conditions are right, but frequently the lost tool leaning to one side presents an additional problem to overcome. Frequently conditions arise that require that the lost tool be dressed down before the fishing tool will take hold, and to remove cutting and cavings from the top of the lost parts. For this purpose special tools are provided.

"Of the innumerable tools for pipe fishing," writes Thomas Curtin in a booklet on fishing troubles published by the Bureau of Mines, "the writer has chosen the overshot as being sufficiently important for detailed description.

"Overshots have three flat springs about 16 inches long, 1½ inches wide, ¼ inch thick, but varying in size to correspond to the size of the overshot. The springs are held erect within a steel bowl. The overshot is run upon pipe larger than the string in the hole. When the overshot comes in contact with the top of the lost pipe, it slips over that pipe, and travels down over the collars. If unhindered by cavings or other obstacles, the overshot can be run to the bottom of the hole. The well then has one string of pipe within another. When the overshot is raised, the upright springs catch under a collar of the lost or inner pipe and this pipe, if free, can then be pulled; however, should it not be free, and the outside string known to be stronger, the inner pipe may be pulled apart. The overshot, though a delicate appearing tool, is capable of withstanding considerable strain. This tool is an excellent one for catching tubing or casing that has been dropped and is broken and crooked, provided it is reasonably certain that the casing or tubing has not become fast in the hole so that excessive strain will be required to pull it."

Other methods of receiving lost casing include the use of casing spears. There are many types of this tool manufactured but they are classified under two heads—bulldog and trip spears. The bulldog, as the name suggests, takes a hold that cannot be broken, while the trip spear can be moved at the will of the driller. The latter design has the advantage of being less injurious to the casing, and permits of change of method should the work not progress satisfactorily.

The trip spear is made in two designs, two-slip and four-slip, the latter being less damaging to the casing than the first. With the use of this design and frequent changes of "holds" a stubborn job can be done without greatly injuring the pipe.

The Bull Dog

Where the bulldog is used, the tool is so made that when it has taken hold, there is nothing but pull, and if something breaks before the pipe moves, there are still worse complications.

There never has been and probably never will be, any set of rules for fishing things out of an oil well. It is one thing that must be learned by experience, and no man will ever learn it all because each case presents an individual problem. It may be simple and it may be hard. Whether or not it is depends upon whether or not the man in charge guesses to do the right thing first.

J. L. McMahon, general superintendent for The Texas Company, North Texas division, relates an instance where a simple but hardly to be thought of arrangement was used to overcome an embarrassing situation which baffled usual methods.

A Difficult Job

"While we could relate many difficult and interesting fishing jobs," Mr. McMahon said, "there is one which we had about two years ago, which, for a difficult proposition, is interesting. We refer to a fishing job on our Heiserman well No. 9, in the Burkburnett field. The well was producing and we had started to clean it out.

"The hole was 1709 feet deep; it had 1503 feet of 6⅝-inch casing in it, together with a liner of 1596 feet of 5 3/16-inch and 127 feet of

4-inch inserted liner which was set on the bottom, and the top of the liner was 14 feet above the bottom of the 5 3/16-inch casing.

"In swabbing the hole, the swab stuck or froze in the 5 3/16-inch casing about 900 feet down from the top of the hole. In jarring on this swab in order to loosen, the line was jarred in two, leaving about 200 feet of cable on the tools. This line was fished out in small pieces and then we ran a blind box to cut the ragged ends off of the rope socket so we could get over it with a combination socket. We then took hold of the neck of the rope socket with a combination socket and in jarring on it, the slips crumbled and broke, allowing the pieces to fall down around the neck of the rope socket. With the use of the blind box once more we succeeded in driving the slips down until we were again able to get a small hold on the rope socket with the combination socket. We then took hold of the tools for the second time and jarred the slips out of the combination socket. This last set of slips with the fragments of wire line and the broken slips filled up the space between the neck of the rope socket and the 5 3/16-inch casing until we could not get hold again as there is but very little space between a rope socket and the 5 3/16-inch casing. This time we were unable to drive the slips down with the blind box so as to get another hold.

"This left us in bad shape as we could not pull the casing for fear that the 4-inch liner would crowd to one side and we would be unable to get the casing back over the liner, and we could not pull the liner as the tools were in the hole and we could not get to it, and being unable to get another hold on the tools, we were compelled to resort to some new method.

Rubber Washer

"We then cut a washer out of heavy rubber belting which fitted the 5 3/16-inch casing very tightly and ran a string of sucker rods with this washer on the traveling valve in place of a cup. This washer fit the casing so tightly that we had to shove the rods down the hole. When the rods reached the tools, the end of the traveling valve was resting on the top of the rope socket and the rubber washer binding on the casing and the upper end of the rods sticking out of the hole above the casing head.

"We then started screwing up the pipe with the engine; naturally the casing began making up on top and in so doing our rods did not turn, but when the casing had made up down to the top of the tools, the friction of the rubber washer on the casing caused the rods to turn thereby showing us when we had made up the pipe sufficiently.

"We then put the elevators on the 5 3/16-inch casing and took a strain on the pipe and began to unscrew it with the engine. If our rods did not turn with the pipe, we knew that we were unscrewing the pipe above the tools. We would then take more strain on the pipe, and when we had taken the proper strain the pipe began to unscrew three joints below the tools and our rods turned with the pipe showing us that we were unscrewing below the tools.

"We pulled the pipe, bringing up the tools with three joints of pipe below them. We then removed the joints that the tools were fastened in, put in new joints, ran our pipe back in and screwed on. The well is still producing.

"Our superintendent, A. D. Doyle, was in direct charge of this work."

Each a Little Worse

"Each fishing job seems to be a little bit worse than the one before," says J. H. Williams, vice president of the Simms Oil Company, who relates an unusual incident in connection with one of the world's most famous wells:

"I have in mind one particular incident that happened while I had charge of the drilling of one of the deepest wells in the world, completed at a depth of 7,286 feet. At a depth of 6050 feet we stuck our tools and, in order to recover same, had to cut the wire line. The knife used was two feet long and five inches in diameter. In cutting the line we unscrewed the knife and left it in the hole. After that we recovered the tools but not the knife. Two years later we encountered a pocket of gas at 6,900 feet which blew the tools up the hole, leaving same in and part of the cable. In getting out the tools at this depth we fished out the rope knife that we had left in the hole at 6050 feet. Evidently it had been driven into the wall."

First Fishing Job.

"I was just a kid, and it was my first fishing job," said John H. Tucker, superintendent of the Gulf Production Company and the Gulf Refining Company of Louisiana.

"We were drilling a water well, and I was the driller. I wasn't much more than 15 years old then. When we drilled down to the water sand at about 150 feet we found that the sand was tight and we got very little water.

"The owner decided that he wanted to shoot the well and filled a beer bottle—yes, it was in the days when beer bottles still were beer bottles—with black gunpowder. We lowered the bottle with a fuse attached to it and waited for it to go off. We waited a long time but it didn't explode. Then the well owner came to me and told me that as I was the contractor it was up to me to get it out. He was afraid that if it stayed in the well, or the bottle was broken, it would poison the water. So it was up to me to get the bottle out without breaking it.

"I got another beer bottle and taking a piece of pine, cut out a hole in it just big enough to slip down on the neck of the bottle with a tight fit. Then I attached the bit of wood on a pipe and went down with it after the bottle, figuring that the bottle was standing up. It went over the neck of the bottle the first time and I let the weight of the pipe push it down tight. When I came out with the pipe there was the bottle filled with gunpowder stuck tight in the hole that had been prepared for it. Maybe you think I wasn't glad."

"Some Un-Junker"

W. E. Brady, Argonaut Oil Company, tells of a fishing job developed in a well drilled in Travis County, Texas, ten miles southeast of Austin, near what is known as Pilot Knob. A rotary rig was used and encountered strata of very hard rock, drilling three days with Hughes bits on a 15-inch layer. This rock baffled all geologists, including those in Washington, Mr. Brady said.

"After having unlimited trouble both with the well and drillers, roughnecks, land owners, and many delays, the driller it seemed lost his temper and proceeded to fix things to his entire satisfaction, and retired from the lease.

"We then secured a driller with a 'rep' as a great un-junker and believe me, he was 'some un-junker' judging from the pile of junk he fished out.

"On his starting work, he found about 300 feet of casing in the bottom of the well, and soon discovered that the top of it had been bradded in the hole, but before this was done, steel bars, sledge hammers, bolts, and all the scrap steel junk that could be picked up around the well, was dumped into it, and in less than thirty days the hole was cleared of all junk and drilling resumed. Of course, it was a duster, as none but we who lost our money ever heard of the Pilot Knob oil field.

"And will say that this un-junker made every tool he used in un-junking this well, in a shop on the lease."

Deep Fishing Job

Recovering a single joint of 6¼-inch casing at the bottom of a 3600-foot hole was the job that confronted the crew of a Texas Company well in Shackelford County. How it was done is told by H. M. Anderson, superintendent for the Texas Company with headquarters at Parks.

"I have in mind a job we had at a deep well in Shackelford County recently," Mr. Anderson said, "and it might be of interest to you. This well was drilled from about 2300 feet to 3600 feet with a rotary and 28-lb 6¼-inch casing was set at slightly over 3600 feet. The well was then drilled from that depth on with cable tools. At about 35 feet below the casing a hole full of salt water was encountered. After drilling through the water sand the casing was raised preparatory to underreaming. When the casing was picked up we had considerable trouble with rotary mud coming in but by considerable bailing we got this mud thinned up. While underreaming the bottom of the bailer was lost, causing the hole to be key-seated or crooked, but do not know which, and while straightening this hole we lost the bottom joint of casing. We took a hold on this joint with a spear and pulled the tools and joint up against the bottom of the remaining part of the casing, then set a casing hitch, cut wire line and pulled casing. The second attempt was successful and we got the lost joint of pipe out. We thought this was a very lucky fishing job in view of the fact that we had a long rotary hole.

"We recently had another fishing job caused by unscrewing of jars while cleaning out, allowing the stem to fall over in the shot hole. We could get a hold on this stem with a wall hook but the weight of the stem would spread the hook and we could not get it to go through the casing. We welded the hook on the bowl of a combination socket and got a hold on the tools that way and succeeded in cleaning the hole."

Another Difficult One

M. B. Sweeney of the Sun Company tells this one:

"One of the most difficult fishing jobs that I ever had was at Sour Lake in 1912 on Hardin County Well No. 1. I had just finished setting 605 ft of 12-inch casing and was putting on 12-inch clamps when the boys dropped one-half of a 12-inch casing clamp in the hole. This half clamp weighed about 160 pounds and would just go in 12-inch casing, making a very close fit. This is what made it such a hard job . Of course, I began at once to try to figure out some way to catch the clamp and after fishing for about 10 days and running every tool imaginable, I finally decided to run a 10-inch overshot, which we could only make take hold on clamp in two ways. The first time we ran the overshot we figured that we had picked up the fish but failed to bring it out of the hole. The second time we ran this overshot we brought the clamp out.

"I considered this one of the most complicated and difficult fishing jobs that I ever saw during my 18 years of experience in the rotary game."

Jobs in West Indies

W. F. Halley recounts unusual conditions encountered while drilling in the British West Indies where the formation was such that the hole had to be practically redrilled with the fishing tool when a fishing job developed. The well itself performed the service after some time had been spent in the fishing operation.

"While working for the Oil Concessions of Mayaro, in Trinidad," Mr. Halley said, "a 16-inch bit and ordinary 6-inch collar was left in the hole. The drill pipe used was English 6⅝-inch. The drill bit was connected to the pipe by an adapter nipple, 8-inch American threads on one end and 11½-inch English threads on the other.

"The location was on what we called Tar Hill, about 30 feet high and covering about four acres. This hill was formed by asphalt, tar, oil and mud coming from five small mouths in the center. Derrick was 30 feet from these mouths, the consulting engineers having decided that there was the seepage, so

get close with the hole, on the theory that the oil could not be missed there.

"This formation was blue shale and would not stand up. As the pipe was pulled out the hole would fill to within 30 feet of the top. Pump would be running nicely, returns would stop. In a minute or so, shale would heave out, thousands of pounds of it. Pump would run along and if slush pit was kept filled, returns would come soon.

"Well, when this twist off occurred and we pulled out, the hole filled up as usual.

"An overshot that could be rotated was designed, with a flapper and two water ways. Hole had to be drilled then with this combination show-overshot. The bit was reached but had turned and could not get over it.

"When the tool was pulled to make a change, shale heaved all the time we were pulling out, and the bit was heaved out with the shale.

"We set 320 feet of 12⅝-inch in the hole, and went to 988 feet and lost hole. Cable tools worked two years in four locations on this job and the deepest hole they ever made was 312 feet. They had 12⅝, 10, 8 and 6-inch set in it.

"While drilling in British Guiana in 1914, near an extinct volcano, a blowout occurred. Instead of gas, oil, etc., cold salt water blew out, turning to ice. Thousands of tons of salt ice covered the hill before the well choked off. I have no way of accounting for this."

River Fishing

W. T. Cushing, general superintendent of the Fensland Oil Company, Cisco, Texas, professes to not know much about fishing as the term is generally applied in the oil industry, but he relates an experience of river fishing that is a little out of the ordinary.

"The most unusual job of this nature that I recall to mind just now," said Mr. Cushing, "was the fishing for 2500 feet of 8-inch line pipe out of the Red River during the flood of June, 1908, the same being a pipe line of the Texas Company crossing the river about five miles northeast of Denison. We were 32 days on this job, employed about 500 men and the cost was $25,000 in addition to a lot of patience.

"However, if you refer to well fishing jobs, the undersigned is at present merely learning the game and would not wish to enter a 'fishing story' unless given a reasonable handicap of several 'holes' up."

In California

The following accounts of fishing jobs were taken from Thomas Curtin's pamphlet on casing troubles and fishing methods, published by the United States Bureau of Mines, and serve to show the application of fishing tools by skilled men in daily practice:

"At Myers No. 3 well, of the Union Oil Co., in a California field, the drillers were E. P. Weiman, Boyd Smith, J. A. McMillan and Superintendent J. A. Kammerdiner. In this hole two strings of pipe were cemented together. It was desired to loosen and recover the inner pipe without disturbing the outer pipe, which was a water string. The hole had within it 3140 feet of 10-inch pipe. Within the 10-inch pipe was 3300 feet of 8¼-inch pipe. When the well was cemented, the cement had raised between the two strings of pipe to a height of 1930 feet from the surface. This left 1210 feet of 10-inch and 8¼-inch pipe firmly cemented together at the bottom of the hole. The 8¼-inch pipe was cut off with casing cutters at 1930 feet, and this amount of pipe was recovered. Then the 8¼-inch pipe remaining in the hole was recovered in short sections by splitting the collars. Sometimes only the collar at the lower end of the top joint would be split. A trip spear would then be run and this joint would be jarred out of the encircling cement and pulled. Two or three joints at a time were the most the drillers ever tried to recover after having made a successful but laborious effort to obtain five joints at one time. This procedure was continued until the 1210 feet of 8¼-inch pipe cemented within the 10-inch pipe was recovered; 160 feet of 8¼-inch pipe still remained in the hole below the 10-inch pipe. This pipe was sidetracked with a new string of 8¼-inch casing, which was successfully landed at 3600 feet. Also, 4278 feet of 6¼-inch casing was landed, and the time the writer obtained this information, 4½-inch pipe was still being carried at a depth of 4,595 feet. The cleaning of this hole took six weeks, and the 10-inch water string was not injured.

Lost 4-Way Bit

"At the Lamerced No. 13 well, of the Union Oil Co., in California, the drillers were Oscar Hinds, Robert Graham and Harvey Hoxworth. The hole was 2411 feet deep. In reaming with a rotary a 4-way bit was lost at 2,000 feet. This bit was then 411 feet off bottom. Seventy feet of drill pipe had been left upon the top of the bit, but as the top joint had been ground up, by rotating with the pipe before it was discovered that the bit was lost, only 50 feet of pipe remained upon the top of the bit. Grabs were run, and the remaining half of the top joint of pipe, twisted into a knot about 18 inches long, was recovered. The remaining 50 feet of pipe was fished out with an overshot, but the bit had come out of the drill collar and remained in the hole. A 10-inch combination socket was now run with 5-inch by 6-inch pin slips to catch the bit, and a small piece of pipe was recovered. A mill was run until the drillers were certain it had reached the bit; then the mill was pulled and replaced by a set of jars over a 12½-inch combination socket. The combination socket gripped the bit, but the bit would not pull. The drill pipe was now swung against the bit by using a jerk line, but the bit still held firm. The hold of the combination socket was then broken by rotating, with water circulating around the jars until the slips mudded up. The combination socket was replaced with a spud. The pipe was worked up and down and circulation maintained through the spud. The spud was then pulled and the bit was fished out with the 12½-inch combination socket fitted with 7¾-inch slips.

"A rotary table bushing was dropped in a rotary hole on the Amalgamated lease in California. A hole about 4 inches in diameter was drilled through the bushing by rotating upon it a steel drill. After the drill had cut a hole, the thread near the top of the drill entered the hole. Thet thread, being tapered slightly, tightened enough as it screwed up to wran the driller when to stop rotating the pipe. The pipe was then pulled and the bushing recovered. Drilling the hole took but 40 minutes turning the pipe."

London, Jan. 14.—The directors of the Anglo-American Oil Company, Ltd., have declared interim dividend of one shilling a share, payable January 16. This is a reduction of 2 shillings from the last dividend and that which the company has been paying semi-annually.

St. Louis, Mo., Jan. 14.—According to reliable information received here it is estimatled that the total output of the Illinois oil fields will show a loss of approximately 750,000 barrels in 1921 as compared with 1920. The total production for the past year is placed at 10,000,000.

During the previous year the recovery aggregated 10,750,000 barrels while in 1908 the state had a production of 35,000,000 barrels.

New York, Jan. 14.—The increase in capitalization of theColonial Oil Company from $50,000 to $5,000,000 as proposed by the directors has been ratified by the stockholders. The increase will be made by the changing of the par value of present stock from 1 cent to $1.

Wichita Falls, Texas, Jan. 15.—The compression casinghead plant of the Interstate Gasoline Company, a subsidiary of the Haskell Interests, located in Block No. 74, Burkburnett field, is being doubled in capacity. It is now equipped with two vacuum and six compressor units, and contracts are being awarded for the additional equipment. It has been announced that the company also contemplates the erection of a 55,000-barrel and one 20,000-barrel steel tank at its refining plant at Iowa Park at an early date.

New York, N. Y., Jan. 16.—Regular quarterly dividends of $2 on preferred stock payable February 28 to stockholders of record February 15 have been declared by Sinclair Consolidated Oil Corporation.

Striving to Please

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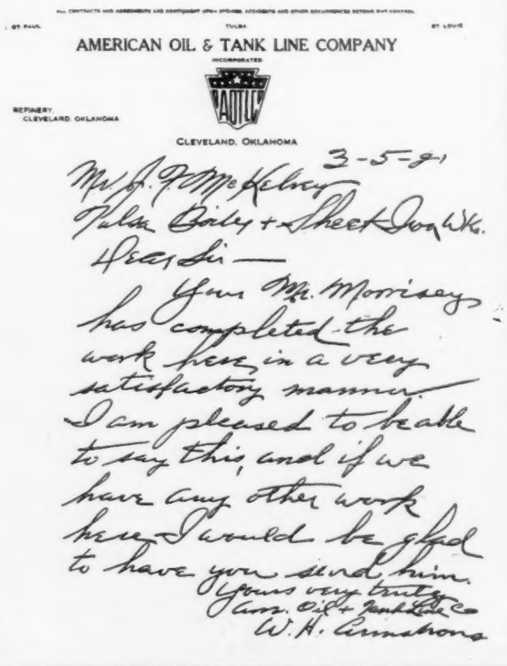

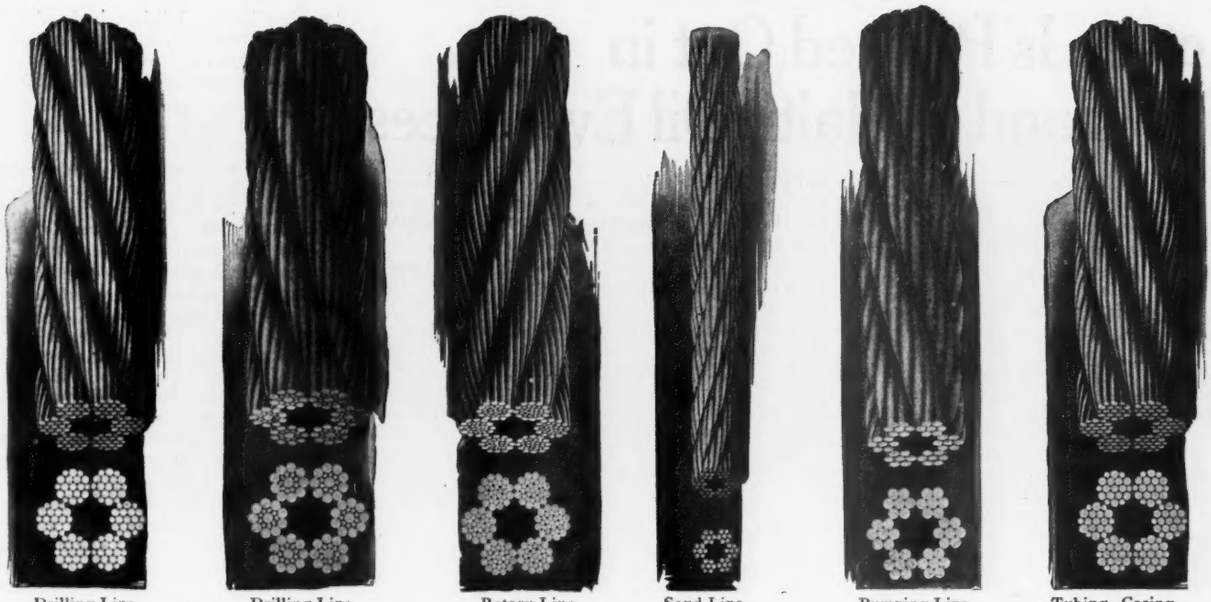

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WILLIAMSPORT LINES have a record of ENDURANCE, in oil field work, because we have designed special lines to meet practically every condition.

One size and construction of rope cannot be expected to suit all purposes—any more than one type of fishing tool can be expected to meet every fishing problem.

We make the popular styles of line shown above, and many others—in various tensile strengths, constructions and diameters.

Don't assume that because you have gotten fair service from one style of line, that style is the best for you. You may get still better service if you will consult with our nearest representative before making your next purchase.

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Petroleum Supply Co., El Dorado, Ark.

Structure Is Pointed Out in Island of Haiti; Oil Evidences

FROM BOTH surface structure and underground formations, the island of Haiti offers inducements for the oil drill, according to a preliminary report just issued by the United States Geological survey. The complete report, based on work done by geologists of the department during the winter of 1920, is to be made public shortly.

As yet there have been no tests drilled in the Republic of Haiti. The region designated as most favorable for testing is the Central Plain, a large syncline, modified by secondary structures, both anticlinal and synclinal. This plain lies between the mountain uplifts in the interior of the northern part of the island. The axis of the syncline lies northwest and southeast, parallel to the structural trend of the two mountain ranges.

The northwestern part of the plain is an asymmetrical syncline, which dips more steeply to the southwest than to the northeast. The structure of the southwest limb is modified by secondary folds, parallel to the trough of the main syncline. The secondary folds include an anticlinal and a synclinal fold.

The crest of the anticlinal fold, which evidently plunges both northwestward and southwestward, is known as the Fond Bleu dome, taking its name from the stream which flows across its northwest end. This fold is asymmetrical and has steep dips northward toward the main synclinal trough.

Another structure, a compound anticline, strikes off from the mountains in the southwestern part of the plain. Three asymmetrical anticlines are superimposed on this compound anticline. Each has a steep dip northward, with more gentle downarwd dips. Crests of the three are apparently parallel, to each other and to the trough of the main syncline.

The one to the north is the largest, known as Thomonde anticline, as the town of Thomonde stands near its crest. The crest of this structure extends for an undetermined distance into the plain.

The middle anticline is the Chamouscadille anticline. It is similar to the Thomonde structure in many features. It is, however, much shorter, plunging more rapidly into the plain.

The shortest and least conspicuous of the three is the one to the south, the Ayaye anticline. Apparently this anticline is not as asymmetrical as the other two.

Another asymmetrical anticline emerges from the mountains into the southeastern part of the plain, running northwestward into the plain. This is known as Belladere anticline. This may be a prolongation of the axis of the Thomonde anticline, however, it is not known that this fold extends across the interior of the plain.

Outcroppings in the plain are of Miocene and Pliocene ages. Formations found in the Pliocene consist of Hinche formation; flood plain deposits, covering large areas of the northern part of the plain. In the Miocene are found Maissade formation, sandstone, siltstone, clay, carbonaceous shale, lignite. These outcrop in a belt of low relief and are confined to the northwestern prat of the plain.

To the west is found the Las Cahobas formation, with coralliferous limestone base. The conglomerate of sandstone and siltstone has marine base. Higher beds show alternations of near-short marine base, with brackish water and non-marine beds. The conglomerates outcrop in the pine-covered ridges.

The Thomonde formation on the west side shows siltstone, sandstone as a conglomerate. It contains rich marine fauna. The outcrop is on the east side. It resembles the Las Cahobas formation. Another formation resembling the Los Cahobas is the Madame Joie on the west side. It shows Coralliferous limestone, with marl and siltstone.

Rocks that outcrop at the flank of the mountains and underlie the surface rocks in the plain are of the upper Oligocene and upper Eocene age. The upper Oligocene, a hard compact, white limestone is approximately 200 meters thick. The upper Eocene, an unconformity, is a hard, compact, light-colored limestone, containing bands and nodules of chert and open-textured limestone. It is of marine formation and 1000 meters thick.

The most promising formation as a source of oil is the Thomonde. Beds in this formation contain remains of a variety of marine organism and some of them show remains of terrestrial vegetation. Local reports that oil seeps from these beds were not confirmed. This formation also contains reservoirs for holding oil.

The Thomonde and Belladare anticlines are the most pronounced folds on the plain. If the Thomonde anticline extends across the plain, coinciding with the crest of the Belledare, domes are probably superimposed on the crest in the interior of the plain. Such domes would be the most favorable localities to test the possibility of obtaining oil in commercial quantities.

If, however, these two domes plunge directly into the plain, the Fond Bleu dome is perhaps the most pomirsing fold, although it is narrower than the plunging anticlines. On the crest of the Fond Bleu dome the base of the

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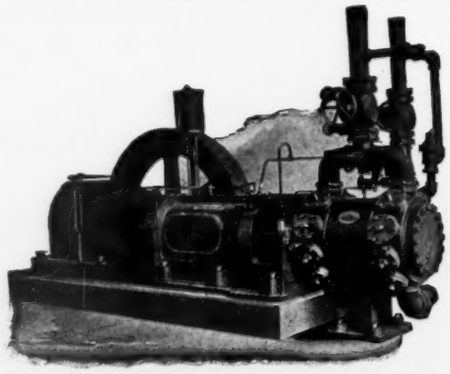

Vilter High Speed Horizontal Refrigerating Machine

Vilter Equipment is used in many of the oil refineries.

Vilter-Milwaukee typifies the true standard of reliability in machinery construction and refrigerating engineering.

Vilter Low Temperature Compression System (for efficiently producing low temperatures with compression system).

Vilter Sales Engineers always at your service.

Branch offices in all principal cities.

Anglo-Persian Oil Company to Issue Additional Stock

London, Eng., Jan. 18.—What form of issue the Anglo-Persian Oil Company will select to increase its capital stock is not known at this time. Announcement that this company, which the British Government is interested in, will soon have additional stock to offer was contained in the annual statement of the chairman, Sir Charles Greenway, here recently in connection with his annual statement to stockholders.

The Anglo-Persian Oil Company in 1921 disposed of £5,000,000 preferred stock and £10,000,000 of second preferred. The company experienced some falling off in profits for 1921 operations, but prospects for extended trade in 1922 are favorable, and indicate that further expansion may be expected, especially in the distribution of refined products, as Anglo-Persian's contract with the Asiatic Petroleum Company will expire at the close of this year. Asiatic Petroleum is subsidiary of Royal Dutch-Schell interests.

For the year ended March 31, 1921, gross profits of the Anglo-Persian Oil Company amounted to £4,948,627, after deducting depreciation, and the total was further reduced to £4,028,022 after allowing for taxes, royalty payments, etc. Gross profits for 1920, after all allowances, aggregated £2,611,615.

New York, N. Y., Jan. 17.—Beginning February 1, George W. Mayer will be in charge of the domestic sales department of the Standard Oil Company (New Jersey). Mr. Mayer has been elected a director of the company and succeeds E. J. Williams, who has resigned. Prior to his coming with the New Jersey company, Mr. Mayer was in charge of sales of the Imperial Oil Company, Ltd., Standard subsidiary in Canada, and also was a director of the company.

New York, N. Y., Jan. 16.—Quarterly dividends of 3 per cent have been declared by Dominion Oil, Texas Chief Oil and Ranger Texas oil, subsidiaries of Middle States.

New York, N. Y., Jan. 16.—Exceeding sales of any previous year excepting 1920, Western Electric Company sales for 1921 approximated $185,000,000. The business outlook for 1922 is good, according to officials of the company.

Thomonde formation is some 200 meters below the surface.

Test wells on any of the anticlinal folds should penetrate the upper part of the upper Oligocene limestone if oil is not found at higher levels.

The whole plain is well watered. Automobile roads enter the plain from both the northwest and southwest. No road material has ever been used between St. Michel and Maissade and during the wet season the black loam of the savanna in the northwestern part of the plain becomes a sea of mud that is almost impassable to motor traffic. Wood is at present the only fuel used in the plain. Outcrops of the Thomonde and Maissade formation are heavily wooded. Scattered pines grow on the ridges formed by the coarse detrital rocks in the Las Cahobas formation.

The only other area of Haiti deserving consideration as its oil possibilities is the Artimonite valley, below Mirobalais. It is a large syncline between two mountain uplifts. Surface rocks here are of Miocene age. These rocks, however, are not so favorable either as sources of oil or as reservoirs as the Miocene rocks of the Central Plain.

Large Orders Placed for Tin Plate Oil Containers

Pittsburgh, Pa., Jan. 17.—Large orders for tin plate for oil containers recently placed by Standard Oil Company (New Jersey) and the Texas Company have been factors in holding the steel market fairly steady in the face of seasonal dulness in many lines. The export situation continues good with inquiries from the Far East indicate that prices at which foreign buyers expect to purchase materials are more in line with American quotations now that was the case some months ago.

The Standard of New Jersey order was for 37,500 tons of tin plate, or 750,000 boxes. Prior to this order the Texas Company had purchased 30,000 boxes and export orders a month or so ago from China amounted to 1,000,000 boxes. Approximately 80 per cent of the Standard's requirements will be handled by the Steel Corporation as well as the greater part of the export orders from China.

Within the last two weeks several fair sized orders have been placed on line pipe. Current quotations on line pipe and oil well casing have been hammered down by competitive bidding and the market for these products is not as firm as had been expected after the reductions of from $5 to $6 a ton posted a short while ago. Schedules are high on finished products among tubular goods interests and companies are still turning out in volume.

The recent slashes in the Eastern crude market has been noticed with some apprehension among makers, who regard the downward trend as a disturbing influence in the market. There are some who are wondering if recent inquiries which have been before the trade will be held up or entirely withdrawn because of the softening in the crude market. Such is not the general expectation, however.

Tulsa, Okla., Jan. 16.—Robert P. Brewer, president of the Exchange National Bank here, the "oil bank of America," has been elevated to the chairmanship of the board succeeding E. W. Sinclair, who removed to New York to head the Sinclair Consolidated Oil Corporation some time ago. Mr. Brewer came to Tulsa from Kansas City.

J. J. McGraw, oil man and banker, was elected president of the Exchange National to fill the vacancy caused by the promotion of Mr. Brewer. Mr. McGraw was a vice president in the bank and came here from Ponca City, Oklahoma.

Kansas City, Mo., Jan. 16.—Officers of the Taxman Refining Company were re-elected at the company's annual meeting held here the first part of this month. Company's report for 1921 indicated a successful growth in business.

Taxman Refining has recently opened offices in Pittsburgh and Tulsa.

PHOENIX IRON WORKS CO.
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All Sizes

Stills River Crossing Clamps Condenser Boxes
Agitators Special Equipment Filters

Our 56 years experience insures Service and Quality

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Improved Deep Well Rig

Embodies These Valuable Features

Friction Tool Hoist, Keystone Patented Spudding Device, Casing Reel, V-Friction Brakes, Patented. Indestructible Steel Sills, Babbitted Bearings throughout.

This machine is new, modern, complete; the product of an old and established concern. It is backed by thirty-five years of experience in the manufacture of portable drilling rigs and a world-wide reputation.

We are building three sizes: No. 27, for 2500 feet; No. 32, for 3000 feet, and No. 35, for 3500 feet depth.

Machines can be seen in various parts of the Kansas, Oklahoma and Pennsylvania fields.

Let us wire you where to find one. Bulletin 302 and prices on request.

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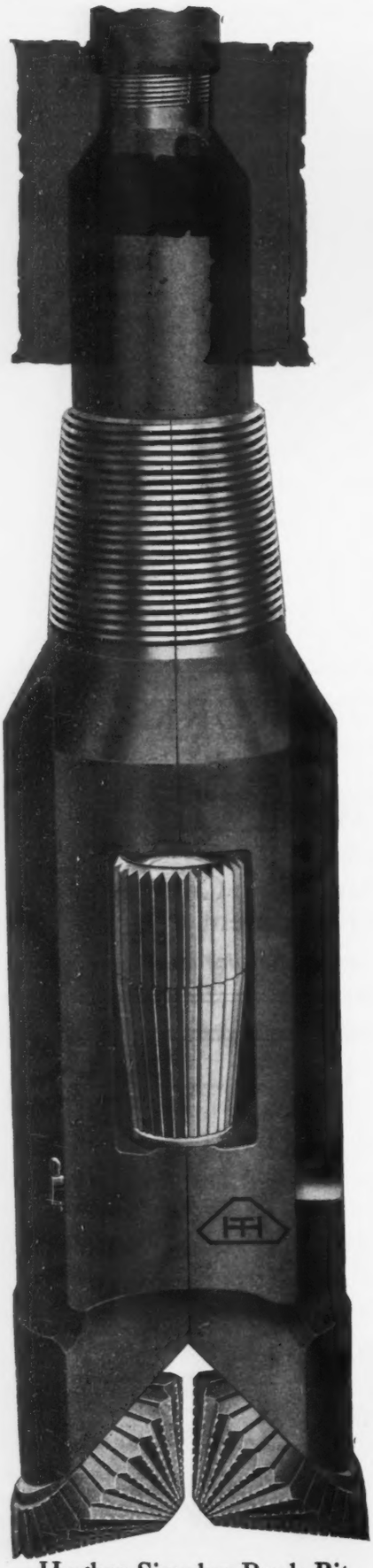

Hughes Simplex Rock Bit

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—Separate water tube (replaceable) now carries water down through center of bit, on to cutting cones, prevents sand cutting of bit shank, and plugging of bit with pump packing.

—Coarse thread shank with tool joint taper prevents galling of threads and "freezing" of drill collar.

—Ribbed section gives ample clearance, prevents bit "hanging."

—Design of bit prevents it "filling up" hole.

—Unit type of cones come assembled on bearing, ready to screw onto bit heads.

—Simplicity of construction makes changing of reamers or cones a simple and speedy operation.

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—In the first place the invention of the cone type of Rock Bit years ago made rotary drilling practical, and many oil fields possible—and successive improvements from year to year, have kept Hughes Rock Bits the Bit for all Rock Drilling.

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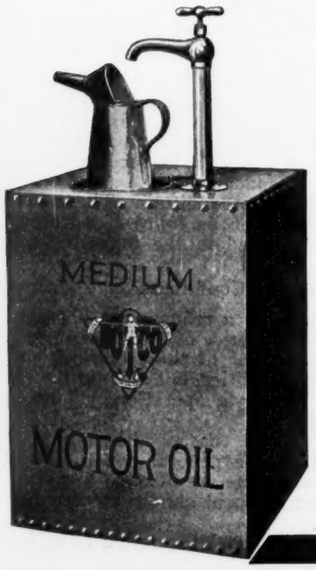
THE Boyco trademark on service equipment for the oil industry, from producer to retailer, is an assurance of quality, long life, and day in and day out usefulness. Boyco Products are built to endure—to give consistent satisfaction in service and to withstand the bumps and wear of shipping and handling. And, aside from strength of construction, they are particularly patterned to exactly fill the needs of the user—purpose-built for practical use.

Boyco Delivery Buckets have been adopted by leading oil companies as standard service equipment. Double-seam construction used throughout. Double jacket, convex bottom, and circular corrugations add stability. Friction type cover fits snugly with gasket between cover and rim. Hinged band handle is firmly riveted to the body. Capacity, five gallons.

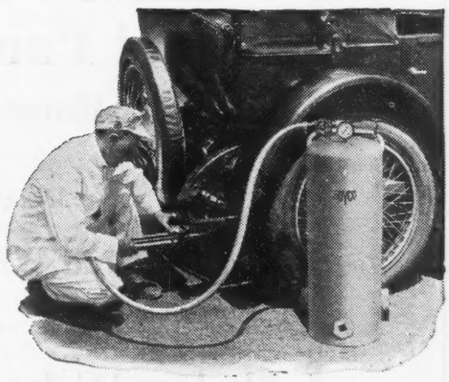
Boyco Shipping Barrels are manufactured in various sizes and are obtainable in either black or galvanized types. The Boyco One-Time Shipper, shown here, is particularly adapted for export use. Boyco I. C. C. Barrels are manufactured to conform with I. C. C. Specification No. 5—strong, leak-proof and durable.

The Boyco Sealer's Measure, shown at the right, is an accurate five gallon measure for testing pumps, containers, and similar equipment. Indispensable for use in connection with service equipment everywhere. Tested and approved by the Sealer of Weights and Measures. Weight, 10 pounds each.

The Boyco Speedol Grease Machine, illustrated below, is a new and extremely ingenious Boyco Product for use in greasing automobile transmissions, differentials, timing gears, etc. Its convenience and pronounced cleanness in use are aptly illustrated. In addition, it furnishes positively accurate measurement of lubricants used; operates with compressed air; carries its own air pressure (sufficient for a day's work) and a lasting supply of grease. Write for complete information.



At the left the Boyco Service Pump Tank is shown. This highly practical Boyco Product is manufactured in four sizes ranging from 15 to 60 gallons in capacity. Heavy galvanized steel is used in construction. Each tank is equipped with a one-inch steady stream nickel plated brass pump. A seven and one-half-inch drip pan fits beneath the pump spout—removable and dust-proof. Neat, convenient, and built for durable utility, Boyco Service Pump Tanks are ideal for general automotive use.



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The Profitable Refining of Petroleum

Operator of skimming plant given choice of four plans to continue in business at a profit

By H. L. DeBar
Refinery Engineer*

WHEN petroleum seepages were discovered during the past ages very little importance was attached to them. Petroleum has been known for centuries but was of little commercial importance. The only practical way in which it seemed to fit in with the world's requirements before the present century was as a crude base for medicines. For unknown periods of time oil had floated down the rivers of Pennsylvania from oil springs and seepages unhindered by mankind.

Finally, however, the fact became known that petroleum contained certain elements or portions which were needed by the world's civilization in its steady progressive march. The demand increased first for the portion which would be used with safety for home illumination and which would displace the more costly sperm oil and tallow candles. This oil represents the kerosene or "burning oil" of today's commerce, although the specifications have changed considerably since its advent. With the demand for this product increasing by leaps and bounds it is little wonder that the refining of oil became an industry of good sized proportions so soon after its birth. Considerable anxiety, however, was caused by the lighter fractions of the petroleum, which being more dangerous to handle and of little use in that day, were disposed of as easily as possible. Where permitted this gasoline, the mighty power of today, was dumped into streams or carried out to sea and pumped overboard.

Soon following the initial heavy demand for kerosene, which put the refining industry on its feet, the lubricating qualities of the heavier portions of petroleum were discovered. The refining industry had become stabilized to a certain extent by this time so that there was already a relation between the value of the refined products and the cost of the crude oil. Competition too was becoming more intense so that the refiner who was equipped to obtain products of more value from a barrel of crude oil than his more unfortunate brother, did his best and kept his secrets of success strictly to himself. By following this method the refining industry has been very slowly developed, many discoveries and improvements had to be made separately by each refiner in order to bring them to the same level of operating efficiency.

Coming of the Automobile

With the coming of the automobile industry the conditions in the refining business were again changed. The product "gasoline" which had been thrown away by the millions of gallons soon outstripped all of the other products in regard to its market demand. Thus the refining industry progressed and as the majority of the refiners became proficient in obtaining a higher rate of return from the crude oil the price of the latter advanced. This meant that the best equipped refiner, in his day, for obtaining the maximum value from a barrel of petroleum has always been able to make a good profit while the one-product plant nearly always has been doomed as a failure soon after starting. So it is today. A topping plant producing gasoline only can generally make a good profit for a short time in a field where the local market for crude oil is temporarily depressed. Soon, however, there comes a time, after the local market has begun to adjust itself, that the refiner must increase his revenue if he expects to pay dividends in the future. The refining of the other light oils is the natural result as it is the cheapest and easiest path and requires the least capital and experience. For these reasons it is chosen by the majority. When conditions have become normal in this particular field the skimming plant too generally shows a monthly loss on the ledger.

This is the position in which most skimming plant operators find themselves at the present time. Their present business is unprofitable and does not appear to have much promise for the future. The skimming plant will seldom permanently prosper in a well-developed field from now on. The conditions are against it. There are some cases, however, where there are exceptional conditions that will allow a plant to operate consistently with a plant profit sufficiently high to pay the overhead and selling expenses, but as a general rule this is not so.

What He Must Do

What must a refiner who finds himself in exactly the above predicament do in order that the stockholders will continue to be satisfied with their returns from year to year? Clearly it is this: he must increase the efficiency of his plant above the average; either that or fight a receivership. The combining of the losses from the refining department with the earnings from some other branch of the business such as producing or marketing does not help the situation in the least. The skimming plant continues to lose just as much money as if it was operated separately. Just as many dollars will be missing from the annual statement of earnings.

When the refiner realizes that some move must be made by him and made quickly his mind turns to the four clearly marked avenues of escape and he finds himself still at a loss to tell which process will benefit him most if installed in his plant. It is to aid the refiner in his decision that these articles are being written. The four methods of increasing the profits referred to above consist of converting the skimming plant in one of the following:

1. Lubricating oil refinery.
2. Cold settling refinery.
3. Complete lubricating and cold settling refinery.
4. Cracking refinery.

In order to intelligently compare the earnings from these four types of refineries with the profit in operating a skimming plant, as well as with each other, it is necessary that the comparison be made with the same crude oil and under the same conditons. These conditions have been taken as follows and apply to all plants considered in the following analysis:

General Conditions

The profits made by a refinery are not only dependent on the sale price of the refined products, cost and character of the crude oil, and the transportation facilities, but also on the efficiency of the refinery's operation and management.

The profits in each case, although very greatly affected by the general conditions of the industry at any time are also, to a certain extent, dependent on local conditions peculiar to that refinery.

To assist in analyzing the situation fully, for

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Hirsch Cooperage and Steel Package Company
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Black and Galvanized Steel Barrels

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We are in position to make immediate deliveries on MUTUAL ZERO OILS.

This is a specially adapted lubricating oil that will flow evenly and not stiffen in zero weather. In order to obtain the best results from lubricants in cold weather, a winter oil should be used that possesses the body and lubricating values necessary to resist extreme cold temperatures.

Your customers will be pleased with MUTUAL ZERO OILS and we advise you to lay in your stock NOW in order to take care of the winter demand of the motoring public as operators of Automobiles and Trucks are changing their oil now.

Write us for prices. Samples submitted if desired.

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PETROLEUM PRODUCTS

PRODUCERS — REFINERS — MARKETERS

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HELENA, BILLINGS, MONT. SUPERIOR
FREMONT, NEB. DENVER, COLO.
KANSAS CITY, MO.

8

all types of refineries the following charts have been prepared showing the following curves:

1. The sales value per barrel of crude oil charged to the refinery.
2. The cost of the crude oil per barrel delivered at the refinery.
3. The cost of refining in addition to the cost of the crude oil.

These curves cover the past four years and represent the average condtions for each month in average refinery. To the right of each curve is shown a shorter curve giving the average conditions on a yearly basis.

An Analysis

It is evident that in making an analysis of this kind that certain assumptions must be made. These are as follows:

1. Crude oil to be Ranger crude or equivalent.
2. Crude oil to be purchased at the average market price each month plus a premium of 25 cents and a transportation charge of 15 cents per barrel, making the total cost at the refinery 40 cents above the average monthly posted price.
3. The percentages of yields to be as shown in the operating statements following the charts.
4. The refined products are assumed to be sold at the time of manufacture at the average market price during the month. No account has been taken of storage.
5. The average market prices of the refined products for each month were obtained as far as possible from the prices published by the trade press, the weekly prices being averaged to obtain monthly averages used.
6. Fuel oil for power purposes and naphtha used in mix and filter wash were charged at the average selling price.
7. Refining costs cover only the operation and management of the refinery and do not include sales or overhead expense such as depreciation, income or other taxes and general administartion expense. These are governed to a large extent by each company's policy regardless of the efficiency of the refinery management.
8. The yields and costs used in compiling these curves and statements of earnings do not represent the best results obtained but rather the average efficiency to be found in the industry. Better results have been obtained in actual practice in practically every item.

Skimming Plant

Following the conditions as stated the sales value of the refined oil from a barrel of crude oil was computed for each month during the years of 1918 to 1921 up to the present time. These figures were then plotted on the chart (see Fig. 1) and are represented by the highest curve. The average annual returns on one barrel were computed likewise for the above years and are represented by the highest curve to the right of the preceeding (see Fig. 2).

The lowest curve in both the monthly and annual comparisons represents the average of one barrel of crude oil delivered at the refinery under the conditions as stated. The curve which is located in the intermediate position on the chart represents the cost of the crude oil as shown by the lower curve plus the cost of refining per barrel run. The distance between the two upper curves will then represent the average plant profit for the month or year as the case may be. This plant profit is the operating profit or the value of the products over and above the cost of the crude oil and refinery operations. From the profit so obtained the overhead charges such as selling, general office and tank car operating expense, must be subtracted. Since these expenses vary so widely for different companies depending on their individual policies they were not included in the analysis of expenses and profits obtainable for each type of refinery. However, the overhead costs will usually run from 25 cents to 60 cents per barrel of crude oil charged to the stills.

The curves as drawn in Fig. 1 and Fig. 2, show very clearly the conditions that have been confronting the average skimming plant owner, who has been trying to make a creditable, showing during the last four years.

In 1918 the skimming plant operator made excellent profits ranging all the way from 50 cents to $1.15 per barrel. The low figure came at the end of the year following the signing of the armistice when the demand for refined products had decreased materially. Assuming an average overhead charge of 30 cents per barrel the refiner made a net profit of 85 cents per barrel at the first of the year and 20 cents per barrel at the end. During the year 1919 the conditions remained fairly stable with the average skimming plant making a plant profit of 30 cents per barrel during the year. Assuming the same amount of overhead charges the plant would return nothing to the refiner during the year for his labors. Dividends, if any were paid, had to be taken from past earnings. During 1920, a period of secondary inflation, following the World War the plant profits rose as high as 93 cents per barrel for a short period of time and the average annual profit was 60 cents per barrel.

Operating Loss

In 1921, however, or the beginning of the present depression, the average skimming plant, due to chaotic market conditions was compelled to operate at an actual loss for several months and in no month has it made sufficient profit to pay the overhead charges. The skimming plant is again passing through a period of operating loss just as at the beginning of the year due to the prices and demand for

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The most powerful clarifying and bleaching material yet produced

This prepared clay is now available to all refiners of mineral, vegetable and animal oils.

As a filtering and decolorizing agent it is four to five times as efficient as the best grades of fullers earth.

Our large plant recently completed and equipped with special machinery for the scientific treatment of this clay is prepared to furnish you with a uniform product covering your requirements.

Detailed information regarding the uses and application of this powerful bleaching agent for different oils furnished upon application

Refineries Clay Co. Inc.

430 Story Building, Los Angeles

To Speed Up Business Use the Long Distance Telephone

It is direct, rapid and economical. As a business producer its possibilities are inexhaustible.

It makes a model salesman—there are no drawing accounts, or slow trains to contend with, and the traveling expenses are not heavy.

We suggest that you use the station-to-station service whenever possible, the rate of this service is 20 per cent lower than the person-to-person service.

Try the Station-to-Station Service

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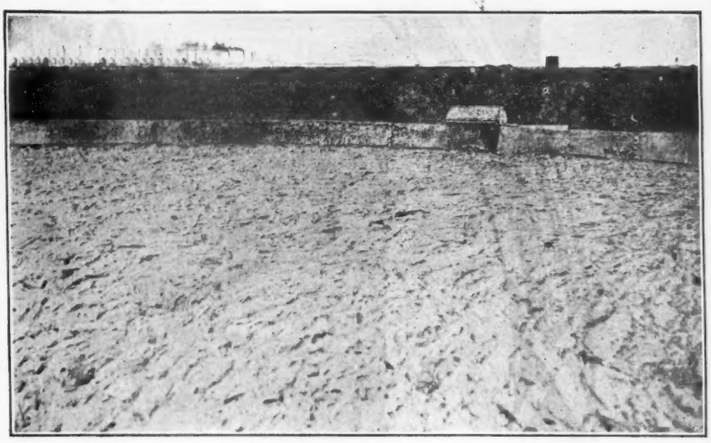
Firefoam
SMOTHERS FIRE



REPRODUCTION of an actual photograph of FIREFOAM floating on the surface of oil after a fire in this tank was extinguished with FIREFOAM.

¶ FIREFOAM Fire Protection will lessen your anxiety over the possibility of a disastrous fire in your plant.

¶ The installation of a standard FIREFOAM system will increase the efficiency of your employees through added sense of security.

¶ Men cannot work to advantage when constantly in fear of fire.

Extraordinary Fire Equipment
For Extraordinary Fire Hazards

Foamite Firefoam Company

FIRE PROTECTION ENGINEERS

200 Fifth Avenue, New York City

WHERE

Deepwater Oils

Are Refined

On the Houston

Ship Channel

Houston, Texas

DEEPWATER

OILS

THOROUGHLY REFINED

THE YEAR ROUND - THE WORLD OVER

"THOROUGHLY REFINED" OIL

MIXED CAR LOADS

Above the Average—

The old idea that quality lubricating oils could only come from Pennsylvania crudes is receiving many a jolt these days.

Deepwater Lubricating Oils

Refined from Texas Naphthene Base Crude are setting a new high standard of quality. Proper crude—thorough refining—prompt, careful handling of orders—and the DEEPWATER policy of selling through jobbers only, is fast developing the scope of these new quality leader oils.

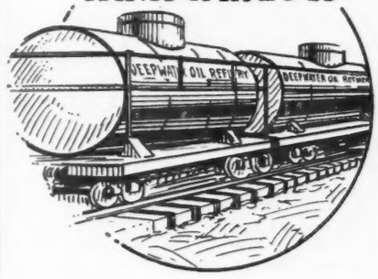
Facilities for Service—

Back of the modern Deepwater Refinery, with its dependable daily run of crude from the same field, and its specialization on highest grade lubricating oils, are facilities for proper shipment of your requirements promptly. This service is extended to every part of the world.

Shipments in Bulk Cargoes—Tank Cars
Wood and Steel Barrels

Send for Specification Sheet

TANK CAR LOTS



"The year round the world over"

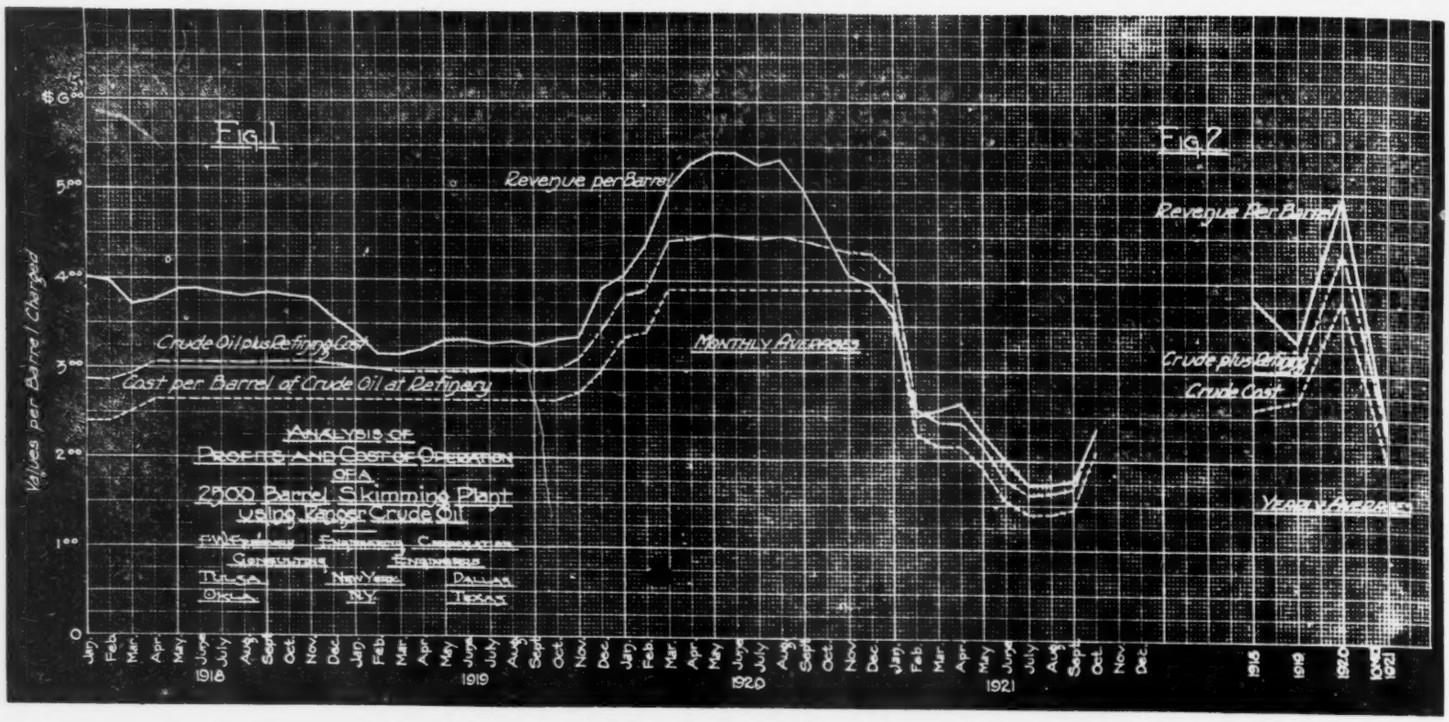
ON SHIP CHANNEL

Deepwater Oil Refineries

Houston, Texas, U. S. A.

BRANCH SALES OFFICES:

New York	Philadelphia	Chicago	London	Anderson, S. C.	Hamburg, Germany
2 Stone St.	Perry Bldg.	108 S. LaSalle St.	6, Broad St. Place	Shreveport, La.	Alsterdam, 7



the refined products not increasing as fast as the cost of the crude oil.

Looking back over the four years it seems reasonable to expect the profits from a skimming plant to be very small in the future when we consider that the competition is becoming fiercer each month in a field already with an excess of refining capacity. The year 1919 will probably represent the average conditions in the future as the profits are not increased by inflation nor decreased by the present depressions.

This indicates that the average skimming plant operator will be lucky if he has sufficient funds to pay dividends after paying overhead charges and allowing for depreciation on his equipment.

It is time that the storing of oil during times of depression or poor market conditions would increase the possible return per barrel of crude oil. However, it is also true that the average skimming plant has only a small amount of storage space on hand. If such a policy is followed it is necessary to shut down or run the refinery at partial capacity. This increases the cost of production and lowers the output so much that it is doubtful if the annual savings would increase the earnings appreciably above the figures given.

It must be remembered that the above analysis is for a special case and that individual cases under other conditions than stated above will make a larger or smaller profit. The above analysis, however, is believed to represent fairly closely the average conditions.

Below is a daily statement of earnings showing what a 2500-barrel skimming plant would have made daily under the preceding conditions during the month of September, 1921.

Daily Statement of Earnings

Skimming plant, 2500 barrels crude daily, September, 1921.

Revenue

	Per cent	Gallons		
Gasoline, New Navy	20.7	21,735	@ $0.1122	$2,438.67
Naphtha, 50° 52°	8.0	8,400	@ .0978	821.52
Kerosene, 42° 43°	19.0	19,950	@ .0251	500.75
Gas oil, 32° 36°	10.6	11,130	@ .0148	164.72
Fuel oil, 24° 26°	39.0	*40,950		497.25
Loss	2.7	2,835		
Total		105,000		$4,422.91

*Or 975 barrels at .51.

Operating Costs

	Barrels		
Crude oil	2,500	@ $1.06	$2,650.00
Premium and pipe line charges	2,500	@ .40	1,000.00
Fuel oil consumed	250	@ .51	127.00
Chemicals for treating			77.50
Labor			170.00
Misc. operating expenses			50.00
Repairs and maintenance			150.00
Total			$4,225.00
Net daily plant profit			$ 197.91

Revenue Per Barrel‡

Sales value of products		$1.77
Cost of crude oil at refinery	$1.46	
Refining cost	.23	1.69
Net profit per barrel		$0.08

‡See curves, Fig. 2.

—Photo by Teunisson, New Orleans.

A Sinclair Consolidated Oil Corporation tanker filling a barge with fuel oil

New York, N. Y., Jan. 17.—The present sales division of the Tidewater Oil Company in the United States have been grouped into four territorial departments to bring about closer supervision of sales efforts.

The Eastern department is composed of the North Atlantic, Atlantic and South Atlantic divisions and is in charge of D. J. Carey as department sales manager. This territory formerly was covered by the divisions known as the Northeastern, Atlantic and Middle Atlantic.

The Central department is in charge of F. Gamerl and comprises the Central, East Central an West Central divisions and formerly was covered by the divisions known as the Pittsburgh, Central and Western. The Western department composes the North Pacific Pacific and South Pacific districts and is under the supervision of Leonard Freer. This area formerly was covered by the Pacific division.

The balance of the trade territory in this country is included in the Wholesale department, which will be divided into five districts, each group to be under a district supervisor of sales.

Gulf Refining Company

OKLAHOMA
TEXAS
LOUISIANA

Refiners of PETROLEUM

REFINED OIL
GASOLINE
NAPHTHA
GAS OILS
PARAFFINE WAX
ASPHALT
FUEL OIL
LUBRICATING OILS
CYLINDER
ENGINE
CORDAGE

Red and Pale Paraffine Oils

General Sales Offices: PITTSBURGH, PA.

District Sales Offices:
NEW YORK HOUSTON ATLANTA BOSTON NEW ORLEANS PHILADELPHIA

Ocean Terminals

Beverly, Mass.
Gibson's Point, Pa.
Port Tampa, Fla.
Port Arthur, Texas
Bayonne, N. J.
Savannah, Ga.
Gretna, La.
Magazine Point (Mobile), Ala.
Providence, R. I.
Jacksonville, Fla.
Galveston, Texas

TEXHOMA

Producers & Refiners

TEXHOMA can serve you right because it *owns* these facilities that are guarantees that you will be cared for:

A 3000 barrel thoroughly modern refinery, which is supplied with crude from our own production in the well-known Texhoma field; also Burkburnett and Holliday fields.

This crude is gathered and transported through our own pipe lines.

One hundred and eighty of the finest tank cars and an efficient Traffic Department to keep them moving, which is always at your service.

All Gasoline treated and steam stilled, and with an end point that makes starting in cold weather a pleasure.

All Kerosene of export specifications.

Get TEXHOMA quotations and samples on all your needs. You will see that we can always give you the product, the price that allows you a good profit and deliveries that put you "in solid" with your customer.

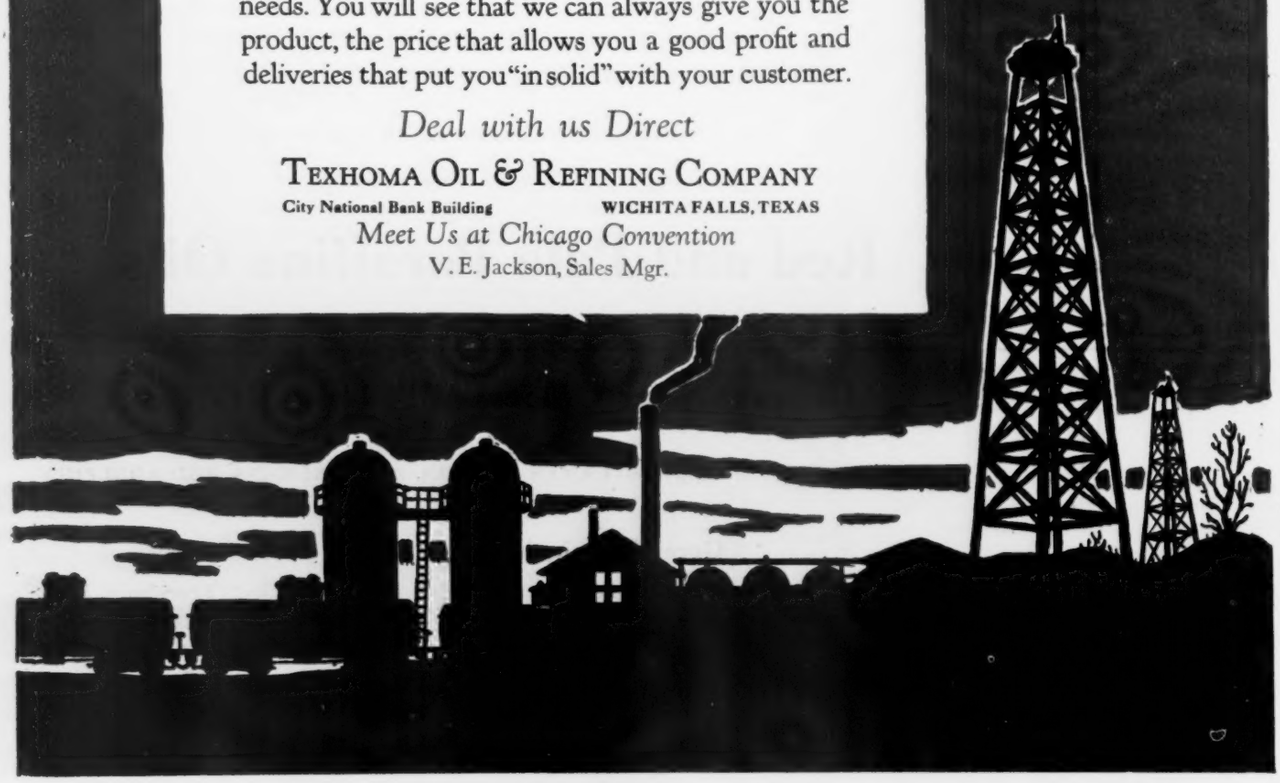
Deal with us Direct

TEXHOMA OIL & REFINING COMPANY

City National Bank Building WICHITA FALLS, TEXAS

Meet Us at Chicago Convention

V. E. Jackson, Sales Mgr.



Natural Gasoline Industry Grows

Demand for product increases in 1921 and many plants are operating

By A. V. Borque
Secretary of the Association of Natural Gasoline Manufacturers

THE year 1921 has been an eventful one for the natural gasoline industry. Starting the year with practically no demand and with the product selling for ridiculously low prices, conditions steadily grew worse until April and May found the natural gasoline business utterly demoralized, with practically no relief in sight. This condition was largely brought about by the cutting off of a lot of contracts by one of the large buyers owing to the fact that a lot of poor gasoline had been supplied on these contracts, which contracts had made the industry unusually prosperous in the previous year. The outlook for the balance of the year 1921 was decidedly dubious.

Just when things were looking bluest, however, an unexpected market, namely the straight-run refiners, was opened to the manufacturers of natural gasoline and the late summer and early fall found the industry again rehabilitated with a strong demand for the product and a prevailing good price. In the late summer and early fall the entry of the Standard Oil Company of New Jersey, with its seaboard refineries using natural gasoline to liven up Mexican crude oil, came into the open market and contracted for amounts estimated as high as 55,000,000 gallons over the period of the winter months at a price averaging 12¾ cents. This new feautre, together with the extraordinary demand for natural gasoline during the summer months, revived the natural gasoline industry to the extent, that, on the whole the year proved much better than the early outlook indicated.

The close of the year, with the demand from the straight-run refiners partly eliminated, together with the falling off generally of gasoline sales in cold weather found the market a little weaker than was at first expected but on the whole satisfactory under the existing conditions.

Although the market at this writing is not as firm as was expected it is safe to assume that the manufacturers of natural gasoline will weather this winter a great deal better than they did the previous one, and, with the spring demand looming just ahead there is no doubt but that the year 1922 will probably be the most profitable in the history of the industry. There are several reasons on which to base this assumption. It has been demonstrated beyond all matter of a doubt that natural gasoline has again taken its rightful place as a motor fuel in this country. Mixed with the straight-run product it has given the consumer the best motor fuel he has ever had and by mixing the natural gasoline with the straight-run product the refiner has been able to cut deeper into his crude, make more gasoline and raise his end point. For that reason, therefore, it is certain that during the summer months at least while the big demand for gasoline is on, the natural gasoline manufacturer will find the straight-run refiner his best market. Then too, motor natural gasoline a blend of natural gasoline and naphtha, has proven to be a satisfactory motor fuel, comparing very favorably with the straight-run product. Another feature which enters into the demand for natural gasoline is the fact that both Mexican and Mexia crudes, being very low in gasoline content, necessarily need natural gasoline to liven them up. In the past four months the contracts with the Standard Oil Company have been mainly used in mixing the natural gasoline with Mexican crude, and in view of the fact that the importation of Mexican crude is again at the ascendancy there is every likelihood that a tremendous amount of natural gasoline will be used to blend with that product.

In the Mexia field no less than 33,000,000 barrels of Mexia crude has been contracted for by the Standard Oil Company. Inasmuch as the crude for that district only runs about 11 per cent gasoline it has been estimated that it will take one gallon of natural gasoline for every three gallons of Mexia crude. That being the case the manufacturers of natural gasoline are confidently expecting that practically all of the natural gasoline of the Mid-Continent district will be contracted for long before the summer rolls around.

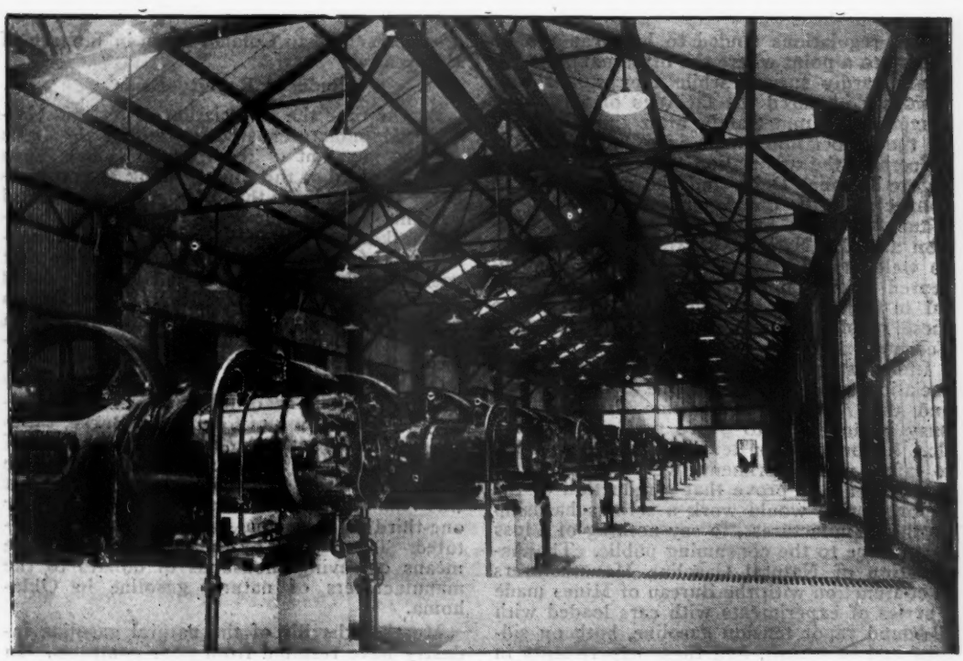
Absorption Method Gains in Favor

The year 1921 saw a swinging over to the absorption method of manufacturing gasoline on a greater scale than ever before. In the past the compression method has been the more popular way of making gasoline and while the 1920 figures show that it still leads the absorption process, there is no doubt but that as the years come on the absorption method will gradually displace the compression method and all the new plants, excepting in fields where the gas is particularly rich in gasoline content, will use the absorption method. In addition to the fact that gas with very little gasoline content can be used to advantage by absorption plants and not at all by the compression method, the absorption product is more stable, requires less initial investment and upkeep and commands one or two cents a gallon above the price of the compression.

Industry Reached Lowest Ebb

In the winter of 1920-21 the condition of the natural gasoline industry became deplorable and as spring approached the industry reached its lowest ebb. Very little, if any, gasoline was being moved and the quantity which was finding its way to market was being moved at prices as low as 4½ and 5 cents in North Texas and 7 and 8 cents in Oklahoma, a condition unheard of in the 16 years since the first natural gasoline was manufactured. The outlook was not bright; in fact it seemed that nothing short of a miracle would save many of the smaller manufacturers from ruin. The condition became so critical that something had to be done, and that immediately. Accordingly a number of the manufacturers in the Mid-Continent district met in Tulsa on April 22, 1921, to discuss ways and means to remedy the precarious situation. At this meeting, at which 82 manufacturers were present, the situation was carefully gone over and it was a consensus of opinion that an organization would be the only effective means of relieving the existing condition. The outcome of this meeting was the organization of the Association of Natural Gasoline Manufacturers.

This organization, starting out with approximately 75 per cent of the gallonage of the Mid-Continent field, had immediate work ahead of it. It was just at this time that Colonel Dunn, Chief Inspector of the Bureau of Explosives, promulgated the rules and regulations intending to reduce the vapor tension in standard cars from 10 to 8 pounds, the regulations to be effective as of June 22, 1921.



Interior view of the Pure Oil Company's gasoline plant at Dawes, West Virginia

Pure Oil Company's combination absorption and compression gasoline plant at Dawes, West Virginia. This is said to be the largest plant of its kind in the world

These regulations tended to handicap the industry to a point where the little manufacturer could hardly survive while they would have seriously impaired the facilities of the larger companies. Immediately after the formation of the association, steps were taken by the officers of the association to secure a hearing before Colonel Dunn and the association, in connection with the American Petroleum Institute, Western Petroleum Refiners Association and the National Petroleum Association as well as the Natural Gas Association, appeared before Colonel Dunn and was successful in securing a postponement of the date these regulations were to go into effect until February, 1922.

Immediately following this hearing the Association of Natural Gasoline Manufacturers and the American Petroleum Institute got busy in an effort to prove to Colonel Dunn that 10-pound vapor tension was not inimical to safety and experiments were conducted on a large scale to prove that a reduction of the vapor tension would work a serious hardship on the manufacturers, to say nothing of a loss in gasoline to the consuming public. The Association of Natural Gasoline Manufacturers in conjunction with the Bureau of Mines made a series of experiments with cars loaded with 10-pound vapor tension gasoline, both on sidings and in transit, and these experiments in connection with those made by the American Petroleum Institute have been correlated and were presented to Colonel Dunn in January of this year.

Reduces Royalty Basis

At the time the Association of Natural Gasoline Manufacturers was organized the basis for the payment of royalties on Indian lands was one-third of the Chicago tank wagon market. Inasmuch as the sales price of natural gasoline was far below the Chicago tank wagon market, and as one had practically no bearing on the other, it was unjust to the natural gasoline industry that royalty payments should be made on that basis. Individual companies had sought to have this basis eliminated for a year or so before the association was organized but nothing had been accomplished. Immediately following the organization of the association steps were taken to bring the matter to the attention of Charles H. Burke, Commissioner of Indian Affairs, and as a result of a hearing before Mr. Burke in July, 1921, the old basis of the Chicago tank wagon market was eliminated and a new schedule calling for one-third of the actual sales price was substituted. This victory by the association was the means of saving thousands of dollars to the manufacturers of natural gasoline in Oklahoma.

Most of the ills of the natural gasoline industry have resulted from poor contracts. In the scramble to get in the game, any price that the lessor asked for his gas was granted. The result was that there were as many different kinds of contracts in effect as there were wells from which the gas was obtained, and in a great many instances gas contracts were such that the manufacturer could not operate his plant at a profit. The Association of Natural Gasoline Manufacturers found a fertile field in which to work on this particular problem and after many months of hard work have finally evolved a universal contract which contains all the good features and eliminates all the bad features of the old contracts. It is expected that this natural gasoline contract will prove as popular as the producers 88 Form of Lease is to the oil business, and having been approved by both natural gasoline manufacturers and a committee of gas owners it is expected that it will fill a long felt want in this direction. The contract is now ready for distribution.

Following the throwing on the market of a lot of "wild" or "outlaw" gasoline the whole industry was affected adversely. Natural gasoline came into disrepute, the jobbers would have none of it and it was necessary to take drastic steps to re-establish the value of this product in the minds of the consumers. Accordingly the Association of Natural Gasoline Manufacturers, through its specification committee, issued a chart covering the following specifications which have been adopted and which are now in general use throughout this country and Canada. These sepcifications cover both the raw and blended gasoline, the former being known as natural gasoline and the latter as motor natural gasoline. Probably no action of the association has met with more approval than the issuance of these specifications for they entirely eliminated all worthless grades of gasoline and only cover the marketable grades now in demand. The specifications follow:

Natural Gasoline

Grade "A"

Gravity	Not below 72° Be., not above 76° Be.
Ep.	Not over 375° F.
Color	Water white
Vapor tension	Not over 10 lbs.
Recovery	Not less than 90%

Grade "B"

Gravity	Not below 76° Be., not above 80° Be.
Ep.	Not over 375° F.
Color	Water white
Vapor tension	Not over 10 lbs.
Recovery	Not less than 85%

Grade "C"

Gravity	Not below 80° Be., not above 84° Be.
Ep.	Not above 375° F.
Color	Water White
Vapor tension	Not over 10 lbs.
Recovery	Not less than 85%

Grade "D"

Gravity	Not below 80° Be., not above 84° Be.
Ep.	Not above 330° Be.
Color	Water white
Vapor tension	12 lbs. maximum
Recovery	Not less than 80%

Grade "E"

Gravity	Not below 84° Be., not above 87° Be.
Ibp.	Not below 65° F.
Ep.	Not above 330° F.
Color	Water white
Vapor tension	15 lbs. maximum

Grade "F"

Gravity	Not below 87° Be., not above 90° Be.
Ibp.	Not below 60° F.
Ep.	Not above 330° F.
Color	Water white
Vapor tension	Under maximum required by Bureau of Explosives.

Grade "G"

Gravity	Specified by seller
Color	Water white
Vapor tension	Specified by seller
Recovery	Not less than 85%

Motor Natural Gasoline

Grade "1"

Gravity	Not below 60° Be., not above 62° Be.
Ibp.	Not less than 87° F.
Ep.	Not over 450° F.
Color	Water white
Vapor tension	Not over 6 lbs.
Recovery	Not less than 90%

Grade "2"

Gravity.....Not below 62° Be., not above 66° Be.
Ibp. .....Not less than 80° F.
Ep. .....Not over 450° F.
Color .....Water white
Vapor tension.....Not over 8 lbs.
Recovery .....Not less than 86%

Grade "3"

Gravity.....Not below 66° Be., not above 70° Be.
Ibp. .....Not less than 70° F.
Ep. .....Not over 450° F.
Color .....Water white
Vapor tension .....Not over 10 lbs.
Recovery .....Not less than 83%

Grade "4"

Gravity .....Specified by seller
Ibp. .....Not less than 85° F.
Ep. .....Not over 465° F.
Color .....Water white
Vapor tension .....Not over 8 lbs.
Recovery .....Not less than 86%

NOTE—All tests to be determined by Methods of A. S. T. M., with additional provision water temperature 32-34 F.

The terms "natural gasoline" and "motor natural gasoline" cover the products formerly known as "casinghead," "absorption" and "blends" which are now obsolete terms. When you buy natural gasoline and motor natural gasolines, order by grades.

Specifications Committee—H. T. Ashton, Chairman; L. F. Bayer, W. L. Walker, A. J. Pfister, D. E. Buchanan.

Is Now Natural Gasoline

Natural gasoline for many years was called casinghead gasoline. One of the first efforts of the Association of Natural Gasoline Manufacturers was to establish a new trade name for the product, namely, natural gasoline. The trade was quick to recognize the advantages of the term and that gasoline from gas is now generally called natural gasoline. All of the trade journals as well as most of the manufacturers and jobbers now call the product by its right name. An effort has been made to establish the term "natural gas gasoline" but the word gas in that title seems superfluous so this product will probably be known in the future everywhere under the term natural gasoline.

The Natural Gasoline Industry

The gasoline from natural gas industry in the United States is a development of 16 years ending 1920. Gasoline was made from the gas of oil wells near Titusville, Pennsylvania, in the fall of 1904 by Andrew Fasenmeyer, whose output the first year aggregated 4,000,000 gallons, which was sold at the rate of 10 cents per gallon. It was not until 1909 that the industry became important and not until 1911 that the Geological Survey began compiling statistics of the annual gasoline output derived from natural gas.

The available statistics show a remarkable growth in the industry during the ten years ending 1920. In 1911 the total number of plants in the entire United States for the manufacture of natural gasoline was only 176, increasing to 596 in 1916, and to over 1200 in 1920. In 1911 the operators numbered 132, 460 in 1916 and 650 in 1920. In 1911 the gasoline output amounted to 7,425,839 gallons valued at $531,704; 103,492,689 gallons in 1916 valued at $14,331,148 and 483,312,050 gallons valued at $71,534,118 in 1920. The average price per gallon in 1911 was 7.16; 13.85 in 1916 and 18 cents in 1920. The average yield of gas in 1911 was 3 gallons per thousand cubic feet of natural gas, decreasing to .496 in 1916 and averaging .894 per thousand cubic feet in 1920.

In the 10 years ending 1920 the total gasoline manufactured from natural gas by the compression and absorption methods and from drips amounted to 1,590,344,571 gallons, having a total value of $252,918,875. During the first five years, 1911-15, the quantity of gasoline manufactured amounted to 151,585,152 gallons, valued at $12,404,355, compared with the total output in the next five years, 1916-20, of 1,438,789,419 gallons, valued at $240,614,520. The total value of natural gasoline in 1917 reached $40,188,956, $50,363,535 in 1918, $64,196,763 in 1919 and $71,534,118 in 1920.

The foregoing shows an amazing growth both in quantity and value since the extraction of gasoline from natural gas became of greater importance. In 1911 the quantity of gasoline recovered from natural gas amounted to 7,425,839 gallons, increasing to 1,590,344,571 gallons in 1920, a gain of 4,670 per cent. The increase in value is even more remarkable, the total value of the raw gasoline produced in 1911 aggregating a sum hardly recognizable in this day of big figures in the petroleum industry, a value of $531,704 increasing to the enormous grand total of $252,918,875, an increase in the 9 years of 21,022 per cent.

The outstanding statistical feature of the year 1921 in the natural gasoline industry was

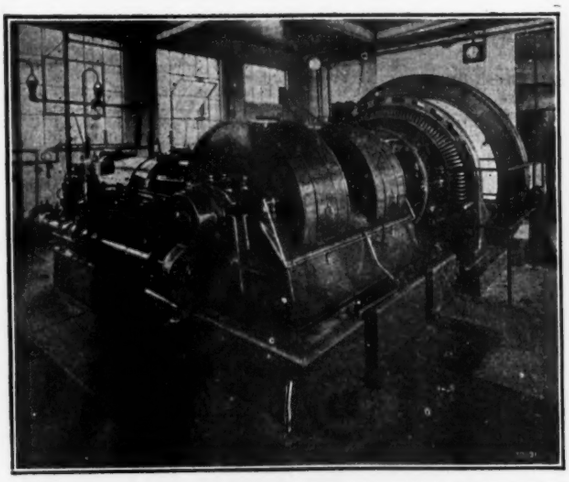
Would Make Gasoline Pay Bonus to Soldiers

Washington, D. C., Jan. 18.—A solution of the perplexing soldier bonus problem has been presented to Congress by Representative Bachrach of New Jersey, who is a republican and a member of the House ways and means committee. Representative Bachrach's solution is aimed at American refiners, who would be compelled to pay a Federal tax of 3 cents per gallon on gasoline. A bill to this effect has been introduced in Congress.

The good roads funds of the District of Columbia and the State of Maryland would be swelled through the application of a tax on gasoline, if present negotiations going on between authorities of the state and district are consummated satisfactorily. The negotiations involve an agreement for placing the tax in both jurisdictions, and would supplant the present practice of the sale of automobile licenses.

The tax to be applied in Maryland and the District of Columbia would be one cent a gallon.

DE LA VERGNE OIL ENGINE



De La Vergne Diesel Oil Engine Type S. I.

A simple pump injection oil engine of the highest obtainable economy without the troublesome air compressor.

Burns any kind of commercial liquid fuel—consumption .4 lb. per horsepower hour.

The first De La Vergne oil engines, built twenty-eight years ago, are still running.

Send for our bulletin 180.

De La Vergne Machine Company

2104 East 138th St., New York, N. Y.

De La Vergne Engine Co., Agents, Houston, Texas

OKLAHOMA-KANSAS NATURAL GASOLINE PLANTS

OKLAHOMA

	Capacity, gallons
A. C. F. Gasoline Co., Crow, Okla., (operated by D. W. Franchot & Co.)	
Plant location, 33-19-7	1,000
Akin Gasoline Co., 5th floor Exch. Natl. Bk. Bldg., Tulsa, Okla.	
Plant location, 9-26-13	800
Plant location, 22-27-13	600
Plant location, 3-16-13	1,000
Alluwe Gasoline Co., Box 568, Coffeyville, Kas.	
Plant location, 34-27-16	1,800
Alteno Gasoline Co., Chelsea, Okla.	
Plant location, Chelsea	1,500
American Gasoline & Carbon Co., R. F. D. No. 1, Chelsea, Okla.	
Plant location, Foyil	3,750
Amity Gasoline Co., Sisterville, W. Va. Branch —Bartlesville, Okla.	
Plant location, Alluwe	....
Plant location, Sapulpa	....
Plant location, Chelsea	6,000
Plant location, Dewey	....
Palnt location, Nowata	....
Arrow Gasoline Co., 714 Kennedy Bldg., Tulsa, Okla.	
Plant location, 25-18-14	600
Arthur Oil Co., 814 Mayo Bldg., Tulsa, Okla.	
Plant location, 18-18-12	1,000
Aurelius-Thomas Gasoline Co., Oklahoma City, Okla.	
Plant location, Drumright	1,000
Plant location, Drumright	2,500
B. & M. Gasoline Co., Tulsa Okla.	
Plant location, Lots 43-44-45	2,000
Plant location, Osage County	....
Bankers Gasoline Co., 307 Cosden Bldg., Tulsa, Okla.	
Plant location, 11-14-15	1,000
Barnsdall Oil Corp., 10th floor Petroleum Bldg., Tulsa, Okla.	
Plant location, 20-21-9	2,000
Plant location, 18-23-12	500
Plant location, 5-20-12	2,000
Bell Oil & Gas Co., 3rd floor Castle Bldg., Tulsa Okla.	
Plant location, Stone Bluff	2,500
Benmo Oil Co., Tulsa, Okla.	
Plant location, Bald Hill	1,200
Bigheart Prod. & Refg. Co., Tulsa, Okla. (Operated by Barnsdall Oil Corp.)	
Plant location, ———	1,000
Blackwell Consolidated Oil & Gas Corp., 25 West 43rd St., New York, N. Y.	
Plant location, Okmulgee	3,000
Plant location, Bartlett	500
Blackwell Oil & Gas Co., Blackwell, Okla.	
Plant location, Blackwell	1,000
Blue Ribbon Gasoline Co., Lynch Bldg., Tulsa, Okla.	
Plant location, Beggs	3,000
Bluff Gasoline Co., Sapulpa, Okla.	
Plant location, 36-18-11	400
Boynton Gasoline Co., 10th floor Kennedy Bldg., Tulsa, Okla.	
Plant location, 14-14-16	3,000
L. G. Bradstreet & Co., Cosden Bldg., Tulsa, Okla.	
Plant location, 3-14-18	300
Brady-Swanson & Kelly,	
Plant location, 30-18-13	500
Buffalo Refg. Co., Tulsa, Okla.	
Plant location, Drumright	1,500
Burke Petroleum Corp., 9th floor Daniels Bldg., Tulsa, Okla.	
Plant location, Okmulgee	2,000
Capitol Gasoline Co.	
Plant location, 16-13-16	125
Carter Oil Co., Exch. Natl. Bank Bldg., Tulsa.	
Plant location, Manuel	1,800
Plant location, Morrison	1,000
Plant location, Yarhola	1,500
Plant location, Davis	500
Plant location, Smith	1,000
Plant location, Gilmore	1,500
Central Gasoline Co., Nowata, Okla.	
Plant location, Nowata	1,260
Central Light & Fuel Co.,	
Plant location, 6-16-12	700
Chase Gasoline Co., Sisterville, W. Va. Branch —814 Mayo Bldg, Tulsa, Okla.	
Plant location, Muskogee	350
Plant location, Muskogee	800
Chestnut & Smith Corp., Chestnut & Smith Bldg., Tulsa, Okla.	
(19 plants)	75,000
Chieftain Gasoline Co., 820 Mayo Bldg., Tulsa, Okla.	
Plant location, Oilton	3,000
G. Childers Co., Nowata, Okla.	
Plant location, Nowata	4,000
Plant location, 17-26-16	700
Cinco Gasoline Co.	
Plant location, near Alluwe	3,000
Cloco Gasoline Co., Castle Bldg., Tulsa, Okla (operated by Iron Mountain Oil Co.)	
Plant location, 34-17-7	1,500
Commerce Gasoline Co., 203 Berryhill Bldg., Sapulpa, Okla.	
Plant location, 18-12-32	850
Continental Gas Compressing Co., 25 Broad St., New York, N. Y.	
Plant location, Lenepah	1,300
Cosden Oil & Gas Co., Cosden Bldg., Tulsa, Okla.	
Plant location, 22-17-7	10,000
Plant location, 15-17-7	3,500
Plant location, 5-16-15	....
Plant location, 15-22-5w	5,000
Plant location, 28-17-14	2,000
Plant location, 19-13-13	2,000
Plant location, Garber	2,500
J. E. Crosbie, Central Natl. Bank Bldg., Tulsa, Okla.	
Plant location, 20-20-13	100
Crosbie & Gillespie, 309 1st Natl. Bank Bldg., Tulsa, Okla.	
Plant location, 15-17-12	10,000
Crystall Gasoline Co.,	
Plant location, 12-14-14	900
Plant location, 34-15-14	500
Crystall White Gasoline Co., 409 Lannom Bldg., Bartlesville, Okla., Branch—Tulsa, Okla.	
Plant location, 1-25-12	600
B. F. Curley	
Plant location, Coalton	200
Cushing Gasoline Co., 806 Cosden Bldg., Tulsa, Okla.	
Plant location, 18-18-7	500
Cushing Petroleum Prod. Co., Sapulpa, Okla.	
Plant location, 18-18-7	500
Paul F. Dahlgren, 227 Masonic Bldg., Bartlesville, Okla.	
Plant location, Dewey	800
Dean Oil Company, 327 Central Natl. Bk. Bldg., Tulsa, Okla.	
Plant location, 19-26-14	900
Decius & Metzer	
Plant location, 7-14-18	200
Desoto Gasoline Co., Beaumont, Texas	
Plant location, 5-14-18	800
Plant location, Wann	275
Dewey Portland Cement Co., 301 Mutual Bldg., Kansas City, Mo.	
Plant location, 21-27-13	3,000
Diamond Oil & Refg. Co., 1006 Coca Cola Bldg., Kansas City, Mo.	
Plant location, Delaware	10,000
Plant location, Oglesly	2,000
Plant location, 21-20-7	4,000
Plant location, 31-26-16	3,000
Plant location, 26-18-12	1,000
Plant location, Delaware	1,000
Eagle Gasoline Co., 503 Central Natl. Bk. Bldg., Tulsa, Okla.	
Plant location, 4-17-12	4,000
Empire Gas & Fuel Co., Bartlesville, Okla.	
(4 plants)	38,000
Enfisco Oil Co. (also Gladys Oil Co.), Exchange Natl. Bank Bldg., Tulsa, Okla.	
Plant location, 17-17-13	3,000
Plant location, 20-17-13	1,000
Plant location, 32-17-13	1,000
Foster & Norwood Oil Co., Bartlesville, Okla.	
Plant location, Bartlesville	2,500
Four Gasoline Co., Bixby, Okla. (Operated by D. W. Franchot & Co.)	
Plant location, Bixby	1,000
Franchot, D. W. & Co., 808 S. Cheyenne Sa., Tulsa, Okla.	
Plant location, Keifer	750
Garland Gasoline Co.	
Plant location, 16-17-7	1,200
Gates Oil Co., Gilliland Oil Co., 1st Nat. Bank Bldg., Tulso, Okla.	
Plant location, Healdton	500
Plant location, Shamrock	175
Plant location, Shamrock	3,500
Plant location, Drumright	450
Plant location, Shamrock	600
Plant location, Drumright	500
Plant location, Bigheart	700
Gladys Belle Oil Co., 218 Cole Bldg., Tulsa, Okla.	
Plant location, 29-17-15	1,000
Plant location, 22-14-11	4,500
Glenn Gasoline Co.	
Plant location, 20-17-12	1,250
B. G. Goble	
Plant location, 5-16-15	1,000
Golden Gasoline Co.	
Plant location, Bartlesville	1,000
Goodwill Gasoline Co.	
Plant location, Muskogee	500
Wm. Graham Oil & Gas Co., Wright Bldg., Tulsa, Okla.	
Plant location, Pershing	2,400
Gypsy Oil Co., Clinton Bldg., Tulsa, Okla.	
Plant location, 5-17-7	13,000
Plant location, 16-17-12	50,000
Plant location, 10-16-7	9,000
Plant location, 1-21-7	3,000
Plant location, 31-21-8	2,800
Plant location, 20-18-13	2,800
Jake Hamon, Ardmore, Okla.	
Plant location, Healdton	1,000
Harlis Gasoline Co., 3rd Floor Castle Bldg., Tulsa, Okla.	
Plant location, 18-23-12	1,200
Hasting Gasoline Co., Bristow, Okla.	
Plant location, 36-18-11	350
Hayner Petroleum Co., 313 1st Natl. Bk. Bldg., Tulsa, Okla.	
Plant location, Cleveland	350
Henderson Gasoline Co., Nowata, Okla.	
Plant location, Lenepah	7,000
Plant location, East Delaware	3,000
Plant location, South Delaware	2,500
Henryetta Oil & Refg. Co., Henryetta, Okla.	
Plant location, 8-11-12	400
Hesco Gasoline Co., 603 Mayo Bldg., Tulsa, Okla.	
Plant location, Drumright	1,150
Heva Gasoline Co.	
Plant location, Kelleyville	1,850
Highway Oil & Refg. Co., Lynch Bldg., Tulsa.	
Plant location, Jenks	1,000
Plant location, Broken Arrow	1,500
Plant location, Stone Bluff	3,000
Plant location, Kelleyvile	1,500
Plant location, Red Fork	500
Plant location, Bald Hill	2,000
Plant location, Okmulgee	2,000
Hope Gasoline Co., 1005 Kennedy Bldg., Tulsa.	
Plant location, 2-18-12	650
Humble Oil & Refg. Co., Houston, Tex. Branch Ardmore, Okla.	
Plant location, Healdton ..... Bbls.	10
Hurley Gasoline Co., 103 Chestnut & Smhith Bldg., Tulsa, Okla.	
Plant location, Beggs ..... gals.	5,000
Hygrade Petroleum & Gaso. Co., 3d floor Castle Bldg., Tulsa, Okla.	
Plant location, 5-16-15 ..... r	2,500
Imperial Gasoline Company	
Plant location, 8-17-7	1,500
Indian Gasoline Co., 533 Kennedy Bldg., Tulsa.	
Plant location, Beggs	2,000
Plant location, 13-21-8	800

a gain by Texas, which increased its production 253 per cent. The output increased in all the states except Oklahoma, Illinois, Kentucky and New York, where it decreased in production. The following states increased by the percentages given: Texas 253 per cent, Wyoming 56 per cent, Kansas 31.98 per cent, California 19 per cent, Ohio 13.8 per cent, West Virginia 12.9 per cent, Louisiana 5.4 per cent and Pennsylvania 4.3 per cent. The decreases in the other states are as follows: Kentucky 12.4 per cent, New York 10.2 per cent, Oklahoma 5.6 per cent and Illinois 0.1 per cent.

	Total Prod. Raw Gasoline	Increase	Monthly Average	Daily Average
1911	7,425,839	.....	.....	.....
1912	12,081,179	.....	.....	.....
1913	24,060,817	.....	.....	.....
1914	42,652,632	.....	.....	.....
1915	6,364,685	22,712,053	5,447,057	179,081
1916	103,492,689	38,128,004	8,624,391	283,542
1917	217,884,104	114,391,415	18,157,009	596,943
1918	282,535,550	64,651,446	23,544,629	774,070
1919	351,535,026	68,999,476	29,294,586	963,110
1920	483,312,050	131,777,024	40,276,004	1,050,171
Total production for ten years				1,509,344,571

	Total value at plant	Increase	Monthly Average	Daily Average
1911	$ 531,704	.....	.....	.....
1912	1,157,476	.....	.....	.....
1913	2,458,443	.....	.....	.....
1914	3,105,909	.....	.....	.....
1915	5,150,823	2,044,914	429,235	14,112
1916	14,331,148	9,180,325	1,194,262	39,263
1917	40,188,956	25,857,808	3,349,080	110,107
1918	50,363,535	10,174,579	4,196,961	137,982
1919	64,196,763	13,833,228	5,349,730	175,882
1920	71,534,118	7,337,355	5,961,186	195,985

Reduced to Barrels of 42 Gallons

1912	287,645
1913	572,876
1914	1,015,539
1915	1,556,302
1916	2,464,112
1917	5,116,288
1918	6,727,037
1919	8,369,882
1920	11,507,430
Total value for ten years	$253,018,875

PENNSYLVANIA TANK CARS

Built-in Strength and Quality Workmanship

The above close-up end view of the latest type A-1D "PENNSYLVANIA" Tank Car shows the new simplified "PENNSYLVANIA" Uncoupling Arrangement, the Brake-Mast Step and Coupler, front view of Trucks, and the end details of the Underframe Construction on all "PENNSYLVANIA" Tank Cars.

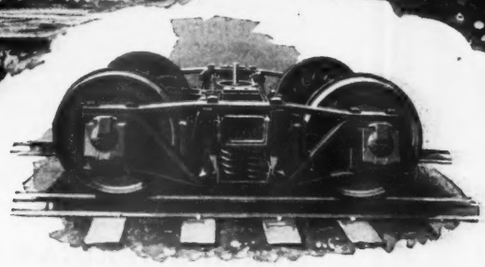
The other two cuts show the side and bottom views of the "PENNSYLVANIA" Arch Bar Truck with a clear insight into its detailed construction features and its perfect mechanical alignment.

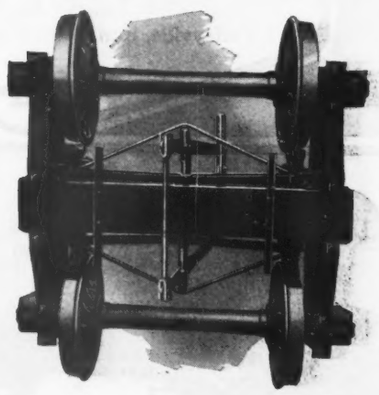
The distinctive engineering improvements found only on "PENNSYLVANIA" Tank Cars embody the results of years of study, and practical tests in actual service of the plans of our skilled engineers and traffic experts—men who know the difficult requirements of tank car traffic from A to Z.

"After All, Quality Counts"

THE PENNSYLVANIA TANK CAR CO.
THE PENNSYLVANIA CAR CO.
PENNSYLVANIA TANK LINE
SHARON, PA.

New York	St. Louis
Houston	Tampico
Tulsa	Kansas City
Denver	San Francisco





"Pennsylvania" Tank Cars are used by Leaders of Industry

	Capacity, gallons
Industrial Gas & Mktg. Co., 318 Security Bank Bldg., Tulsa, Okla.	
Plant location, 17-14-16	300
Plant location, 4-17-12	300
Invader Oil & Refg., Co, Barnes Bldg., Muskogee, Okla.	
Plant location, Bald Hill	2,000
Jonteel Gasoline Co., 536 Mayo Bldg., Tulsa, Okla.	
Plant location, Mounds,	Shut down
Plant location, Jenks	....
Junior Refining Co., Okmulgee, Okla.	
Plant location, ———	1,000
King Creek Petroleum Co., Sapulpa, Okla.	
Plant location, Boynton	2,500
Kingsmith Refining Co., Chestnut & Smith Bldg., Tulsa, Okla.	
Plant location, 2-16-10	1,600
Kingwood Oil Company, Parkinson Bldg., Okmulgee, Okla.	
Plant location, Okmulgee	40,000
E. Lane Gasoline Co.	
Plant location, 17-26-16	150
Liberty Gasoline Co., Turlton, Okla.	
Plant location, Turlton	2,000
Lilly Gasoline Co.	
Plant location, Sapulpa	2,000
Liquified Petroleum Co., Kennedy Bldg., Tulsa, Okla.	
Plant location, 21-21-17	1,000
Plant location 9-24-17	3,000
Plant location, 3-24-17	1,200
Plant location, 8-24-17	1,200
Livingston Oil Corp., Livon Bldg., Tulsa, Okla.	
Plant location, Bixby	500
Plant location, Broken Arrow	800
Magnolia Petroleum Co., Gt. Sou. Life Bldg., Dallas, Texas. Branch—Oklahoma City, Okla.	
Plant location, Drumright	2,000
Plant location, Oilton	1,500
Plant location, Oilton	1,500
Plant location, Oilton	1,200
Plant location, Shamrock	2,500
Plant location, Shamrock	1,600
Plant location, Henryetta	350
Plant location, Healdton	400
Plant location, Healdton	700
Plant location, Healdton	200
Plant location, Healdton	100
Plant location, Cushing	5,000

NORTH AMERICAN CAR CO.

LESSORS OF TANK CARS

INSULATED CARS FOR LEASE

Insulated tank cars maintained by us for leasing purposes are kept in perfect condition in our own shops in Chicago and at Coffeyville, Kansas. Because of this and low rental charge, even companies with sufficient shipping to warrant purchase, find it more advantageous to lease than to buy.

We have a limited number of insulated cars available for immediate lease. Write or wire for details.

Car Repairs
Steel Plate Work

NORTH AMERICAN CAR CO.
327 S. LaSalle St., Chicago, Ill.
Coffeyville, Kan. 1003 Daniel Bldg., Tulsa

	Capacity, gallons
Marland Oil Co., Ponca City, Okla.	
Plant location, Ponca City	....
Plant location, Mervine	8,000
Plant location, Garber	....
Mart Gasoline Co.	
Plant location, Sapulpa	150
McCaskey & Wentz, Balckwell, Okla.	
Plant location, 1-28-1w	3,000
McMann Gasoline Co.	
Plant location, Drumright	600
Mercantile Oil & Gas Co., Muskogee, Okla.	
Plant location, Muskogee	350
Meridian Petroleum Corp., Kansas City, Mo. Branch—Tulsa, Okla.	
Plant location, Sapulpa	11,500
Plant location, Bixby	500
Merrick Gasoline Co., Ardmore, Okla.	
Plant location, Wirt (5-4s-3w)	3,000
Mid-Co Gasoline Co., Mid-Co Bldg., Tulsa, Ok.	
Plant location, 18-23-2w	15,000
Plant location, 27-27-13	10,000
Plant location, 36-26-14	1,500
Plant location, 9-18-17	8,000
Plant location, 17-18-7	2,000
Plant location, 16-18-14	1,000
Plant location, 4-19-16	1,200
Plant location, 5-17-7	1,000
Milage Gasoline Co.	....
Plant location, 15-15-14	400
Plant location, 36-12-13	1,100
Plant location, 35-12-13	800
Plant location, 20-19-12	350
Miller Improved Gas Engine Co., Tulsa, Okla.	
Plant location, Stone Bluff	800
Model Gasoline Co., 816 1st Natl. Bank Bldg., Tulsa, Okla.	
Plant location, Covington	3,500
Mohawk Refining Co.	
Plant location, Sand Springs	150
Monarch Oil & Gasoline Co., 213 Castle Bldg., Tulsa, Okla.	
Plant location, Watkins	1,000
Moon Gasoline Co., Chestnut & Smith Bldg., Tulsa, Okla.	
Plant location, Bixby	6,000
Motor Gasoline Co., Muskogee, Okla.	
Plant location, 8-18-7	1,500
Plant location, 34-15-18	500
National Products Co., Box 628	
Plant location, Cleveland	1,200
Plant location, Cleveland	5,500
Plant location, Oilton	1,200
Plant location, Oilton	1,200
Plant location, Mounds	800
Plant location, Slick	1,000
Nixon Oil Co., Tulsa, Okla.	
Plant location, Owasso	450
Noble, Chas F. Oil & Gas Co., Kennedy Bldg., Tulsa, Okla.	
Plant location, Quay	1,000
Nowata Oil & Refg, Co., Nowata, Okla. Branch —Tulsa, Okla	
Plant location, Nowata	1,600
Offenbacher Petroleum Co., 716 Kennedy Bldg., Tulsa, Okla.	
Plant location, Broken Arrow	800
Oil State Gasoline Co., 407 Kennedy Bldg., Tulsa, Okla.	
Plant location, 17-18-13	2,000
Plant location, 5-14-18	3,500
Oklahoma Central Oil Co., 407 Cosden Bldg., Tulsa, Okla.	
Plant location, Beggs	2,800
Oklahoma Natural Gas Company, 117 W. 4th St., Tulsa, Okla.	
(6 plants)	12,000
Oklahoma Natural Gasoline Co., 203 Berryhill Bldg., Sapulpa, Okla.	
Plant location, Mounds	1,200
Oklahoma Prod. & Refg. Corp., O. P. & R. Bldg., Tulsa, Okla.	
Plant location, Keifer	200
Old Dominion Oil & Gasoline Co., 537 Mayo Bldg., Tulsa, Okla.	
Plant location, Yale	4,000
Plant location, Mohawk	5,000
Tulsa, Okla.	
Orfic Gasoline Prod. Co., 1039 Kennedy Bldg.,	
Plant location, Keystone	2 unit
Plant location, Cleveland	3 unit
Plant location, Jennings	4 unit
Osage Development Co.	
Plant location, 18-23-12	200
Overland Petroleum Co., 638 Kennedy Bldg., Tulsa, Okla.	
Plant location, 4-17-12	800
Paraffin Oil Co., V. Weem Bldg., Beaumont, Texas	
Plant location, 20-18-13	350
Parkville Oil Corp., 243 Lynch Bldg., Tulsa.	
Plant location, Shamrock	1,800
Pearl Gasoline Co.	
Plant location, 34-17-7	1,000
Pep Gasoline Co.	
Plant location, 13-21-8	1,000
Peppers Gasoline Co., 1st Natl. Bank Bldg., Enid, Okla.	
Plant location, 24-22-4	1,500
Persian Gasoline Co.	
Plant location, Muskogee	250
Phillips Higrade Refg. Co., Petroleum Bldg., Tulsa, Okla.	
Plant location, Okmulgee	9,000
Phillips Petroleum Co., Bartlesville, Okla.	
Plant location, 11-25-11	5,000
Plant location, 32-27-13	7,500
Plant location, 6-24-10	2,000

PETROLEUM PRODUCTS

Refiners, Exporters and Marketers of Petroleum

❧ ❧ ❧

NATIONAL PETROLEUM CORPORATION
OF AMERICA

Insurance Building, Dallas, Texas

Sales Offices:

NEW YORK	SAN FRANCISCO	CHICAGO	TULSA, OKLA.	WICHITA FALLS
25 Broadway	64 Pine Street	508 South Dearborn	Cosden Bldg.	City National Bank

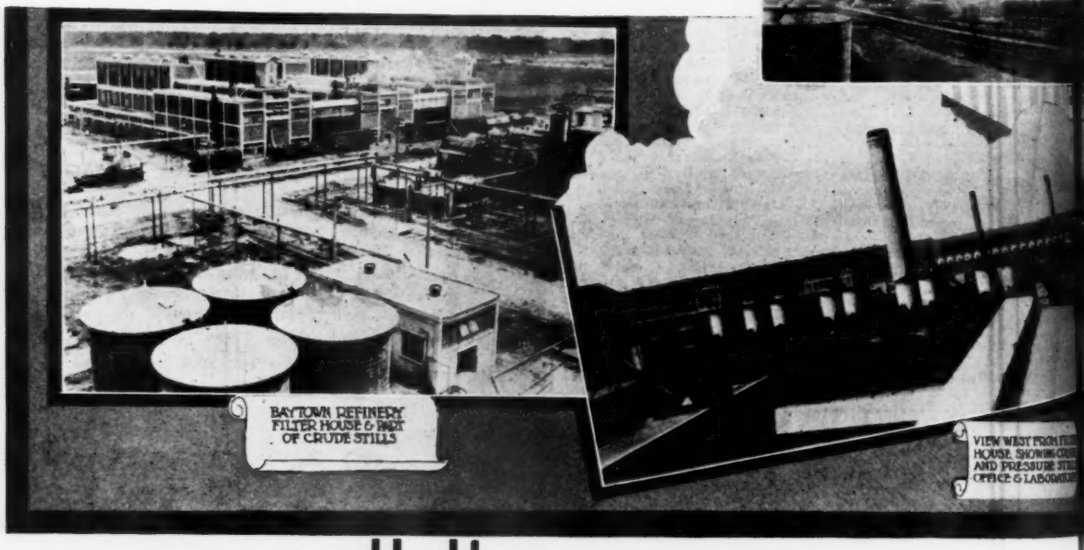
Foreign Terminals:

Rotterdam	Amsterdam	Antwerp	Hamburg

HUMBL

The illustrations shown are a few of the scenes of the Humble Oil & Refining Company's Refinery at Baytown, Texas.

This refinery, which has been under construction for the past three years, is now complete and is one of the most modern refineries in the world.

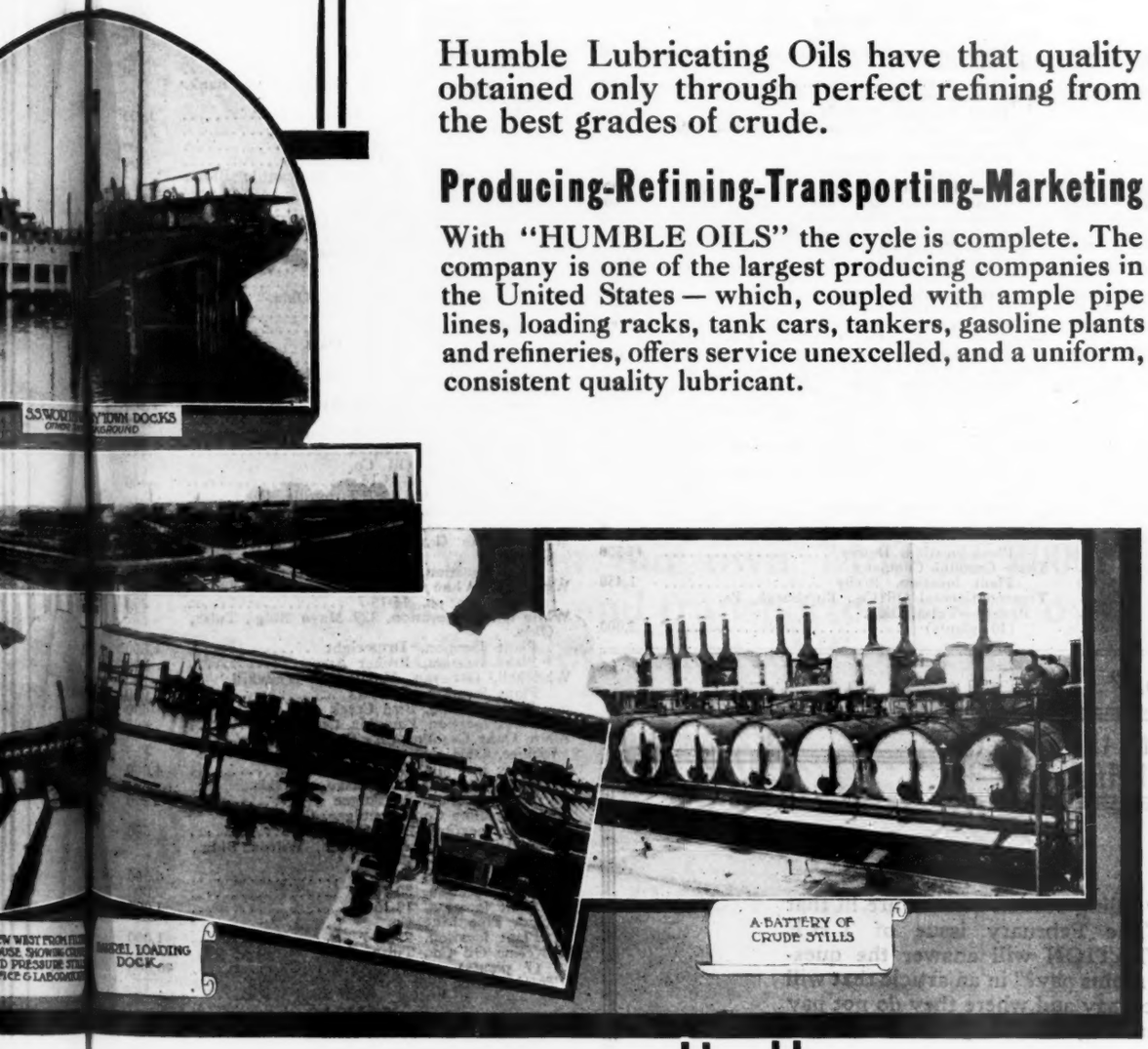


HUMBLE OIL &

HOUSTON,

General

LE OILS



Humble Lubricating Oils have that quality obtained only through perfect refining from the best grades of crude.

Producing-Refining-Transporting-Marketing

With "HUMBLE OILS" the cycle is complete. The company is one of the largest producing companies in the United States — which, coupled with ample pipe lines, loading racks, tank cars, tankers, gasoline plants and refineries, offers service unexcelled, and a uniform, consistent quality lubricant.

& REFINING CO.

ON, TEXAS

eral Office

	Capacity, gallons
Piedmont Petroleum & Gasoline Co.	
Plant location, 29-18-15	800
Pleasant Hill Gasoline Co.	
Plant location, 2-17-7	250
Polar Prod. & Refg. Co., 401 World Bldg., Tulsa, Okla.	
Plant location, Beggs	1,000
Plant location, 13-14-12	600
Pure Oil Co., Pure Oil Bldg., Tulsa, Okla.	
Plant location, Oilton ....Bbls.	145
Plant location, Drumright ....Bbls.	154
Plant location, Healdton ....Bbls.	40
Red Demon Gasoline Co.	
Plant location, 9-14-18	700
Rechmond Gasoline Co.	
Plant location, 30-19-12	1,200
Richardson Gasoline Co.	
Plant location, N. Sapulpa	600
E. L. Robinson	
Plant location, 25-17-10	200
Robinson & Ice Gasoline Co., 413 Kennedy Bldg., Tulsa, Okla.	
Plant location, Leonard	1,000
Rotary Gasoline Co., 209 Lynch Bldg., Tulsa, Okla.	
Plant location, Sperry	1,400
Roxana Petroleum Corp., 9th floor Mayo Bldg., Tulsa, Okla.	
Plant location, 8-17-7 ....bbls.	120
Plant location, 18-12-6 ....bbls.	25
Royalties Corporation, 140 So. Dearborn So., Chicago, Ill. Branch—Tulsa, Okla.	
Plant location, 1-27-15	350
Rowland Gasoline Co., Shamrock, Okla.	
Plant location, 10-16-7	1,200
Plant location, 32-18-7	700
Plant location, 4-16-7	1,800
Plant location, 33-19-7	900
Sabine Oil & Mktg. Co., Drew Bldg., Tulsa.	
Plant location, East Tulsa	1,000
Sapulpa Refining Co., 7th floor 1st Nat. Bank Bldg., Tulsa, Okla.	
Plant location, Shamrock	2,000
Savoy Oil Co., 601 1st Natl. Bank Bldg., Tulsa, Okla.	
Dismantled	1,000
Seaboard Oil & Gas Co., 212 Barnes Bldg Tulsa, Okla.	
Plant location, Morris	100
Sequoyah Oil & Refg. Co., 316 Dallas Bldg., Tulsa, Okla.	
Plant location, Morris	1,000
Shaffer Oil & Refg. Co., Oklahoma City, Okla.	
Plant location, Cushing	....
Plant location, Cushing	8,000
Plant location, Drumright	....
Plant location, Drumright	....
Plant location, Okmulgee	....

	Capacity, gallons
Silver Gasoline Co.	
Plant location, 32-23-14	500
Sinclair Oil & Gas Co., Sinclair Bldg., Tulsa, Okla.	
Plant location, Cleveland	4,500
Plant location, Drumright	4,500
Plant location, Shamrock	4,500
Plant location, Bald Hill	500
Plant location, Stone Bluff	700
Plant location, Covington	6,500
Plant location, Hominy	2,500
Skelly Oil Co., Sales Office, Midland Ref. Co., El Dorado, Kansas.	
Plant location, Winona	4,000
Plant location, Slick	1,000
Plant location, Slick	500
Skiatook Gasoline Co.	
Plant location, Skiatook	850
Thomas B. Slick	
Plant location, 34-17-7	500
Solar Oil Co.	
Plant location, 20-17-11	1,000
Sooner Gasoline Co.	
Plant location, Yarhola	2,000
Southland Gasoline Company, 702 Cosden Bldg., Tulsa, Okla.	
Plant location, Oilton	2,500
Plant location, Sapulpa	1,200
Plant location, Sapulpa	1,200
Plant location, Red Ford	600
Plant location, Bartlesville	1,500
Standard Oil Company (Indiana), Chicago, Ill. Branch—Tulsa, Okla.	
Plant location, 34-18-7	14,000
Plant location, 21-18-7	6,000
Plant location, 29-18-7	20,000
Plant location, 4-18-7	15,000
Plant location, 4-16-1	15,000
Standford Gasoline Co., Oklahoma City, Okla.	
Plant location, ———	1,000
Stebbins Oil & Gasoline Co., Cole Bldg., Tulsa.	
Plant location, Inola	1,000
Plant location, Boynton	1½ units
Sterling Gasoline Co., Tulsa, Okla.	
Plant location, Morris	500
Stoutz Bros., Arkansas Bldg, Muskogee, Okla.	
Plant location, Muskogee	1,500
Sun Gasoline Co., Chestnut & Smith Bldg., Tulsa, Okla.	
Plant location, Muskogee	3,000
Test Oil Co., 43 Main St., Bradford, Pa. Branch —Bartlesville, Okla.	
Plant location, Dewey	500
Three Gasoline Company	
Plant location, Bixby	1,450
Transcontinental Oil Co., Pittsburgh, Pa. Branch—Tulsa, Okla.	
(10 plants)	2,000

	Capacity, gallons
Texas Company, 17 Battery Place, New York, N. Y. Branch—Tulsa, Okla.	
Plant location, 22-15-14	4,000
Plant location 8-17-12	20,000
Plant location, 17-19-12	150
Plant location, 11-14-17	4,000
Plant location, 35-2-8	1,500
Plant location, 16-17-7	20,000
Plant location, 9-18-7	5,000
Plant location, 6-19-6	1,500
Plant location, 7-24-11	1,500
Tidal Refining Co., Tidal Bldg., Tulsa, Okla. 17 plants	37,550
Totem Gasoline Co.	
Plant location, 24-18-12	600
Tower Gasoline Co., Blackwell, Okla.	
Plant location, 3-29-1	2,500
Plant location, 24-19-5	600
Plant location, 12-17-1	400
Plant location, 12-13-12	200
Plant location, 6-26-1	350
Tribes Gasoline Co., 506 Central Natl. Bank. Bldg., Tulsa, Okla.	
Plant location, 36-17-12	1,000
Plant location, 35-18-12	2,500
Plant location, 6-12-11	800
Plant location, 29-18-15	300
Triumph Gasoline Co., 209 Mercantile Bldg., Oklahoma City, Okla.	
Plant location, Okmulgee	3,000
Tulsa Gasoline Mfg. Co., 206 Cole Bldg., Tulsa.	
Plant location, Glenn pool	800
Twin State Oil Co., 524 So. Cheyenne St., Tulsa.	
Plant location, 1-19-5e	5,000
Plant location, Healdton	2,000
Twitchell & Meyers, Okmulgee, Okla.	
Plant location, 35-12-13	250
Plant location, 12-14-14	500
Una Gasoline Co., Chelsea, Okla.	
Plant location, Chelsea	400
Union Gasoline Co., Chestnut & Smith Bldg., Tulsa, Okla.	
Plant location, Drumright	7,500
Plant location, Oilton	3,000
Victor Oil Company, Petroleum Bldg., Tulsa.	
Plant location, Walters	....
Virginia-California Oil Co.	
Plant location, 7-13-15	500
Warner Caldwell Oil Co., Titusville, Pa.	
Plant location, Delaware	500
Plant location, Adair	400
Water White Gasoline Co., Box 341, Tulsa, Okla.	
Plant location, 12-22-14	800
Western Gasoline Co.	
Plant location, 16-18-7	700
White Oil Corporation, 329 Mayo Bldg., Tulsa, Okla.	
Plant location, Drumright	1,800
Plant location, Broker Arrow	800
Whitehall, Donovan, Hayden & Whitehill	
Plant location, Childers	1,000
Plant location, Bird Creek	400
Plant location Pumpkin Center	400
White Oaks Gasoline Co., Postoffice Bldg., Okmulgee, Okla.	
Plant location, Beggs	4,000
Whitfield-Sears Oil Co., Muskogee, Okla.	
Plant location, Muskogee	250
Wicey Gasoline Co., Okmulgee, Okla.	
Plant location, 35-16-13	500
H. F. Wilcox Oil & Gas Co., Wilcox Bldg., Tulsa, Okla.	
Plant location, 36-15-11	6,000
Plant location, 30-15-11	2,000
Plant location, 18-16-10	3,000
Wichita Pipe Line Co.	
Plant location, 21-18-7	1,000
Wolverine Oil Co., Tulsa, Okla.	
(7 plants)	40,000
Total, plants, 396.	

KANSAS

Aero Gasoline Co., Caney, Kansas	
Plant location	300
Barco Gasoline Co., Chestnut & Smith Bldg., Tulsa, Okla.	
Plant location, Sedan	2,000
Plant location, Peru	2,000
Paul F. Dalhgren, 227 Masonic Bldg., Bartlesville, Oklahoma	
Plant location, Elgin	600
Eureka Gasoline Co. (Hale Petroleum Co.), Neodesha, Kansas,	
Plant location, Neodesha	2,000
Empire Gas & Fuel Co., Bartlesville, Okla.	
Plant location, Arkansas City	5,000
Empire Gasoline Co., (Empire Gas & Fuel Co.), Bartlesville, Oklahoma,	
Plant location, Caney	1,000
Jayhawker Gasoline Co.,	
Plant location, Coffeyville	500
Pep Gasoline Co., 3324 Virginia Ave., Kansas City, Mo.	
Plant location, Sedan	2,000
Roth Gasoline Corp., Box 392, Independence Kansas,	
Plant olcation, Elgin	2,000
Standford Gasoline Co.	
Plant location, 16-34-12	1,000
Sedan Gasoline Co.	
Plant location, Sedan	500
Swanson-Kelly & Noble Oil Co.	
Plant location, Elgin	500
Tower Gasoline Co.	
Plant location, Caney	1,500
Total plants, 14.	

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MOTORITE GASOLINE

REFINERIES OF THE UNITED STATES

ALTHOUGH the year 1921 can not be listed as one favorable to the refining industry, still progress was shown in construction of new plants. Practically every State shows an increase in refining capacity.

The most pronounced difference in the refinery report of this year and that of the year previous is in new projects and increases in plants. Last year the canvass made by The OIL WEEKLY showed a total of 295,150 barrels of refinery capacity being added to the nation's total through new construction, additional capacity or projects contemplated. This year the total is only 44,700 barrels.

Noticeable for this report is the rise of Arkansas as a refining State. The coming in of the El Dorado field is, of course, responsible for this.

The list of plants for the United States is given below by States:

ARKANSAS

Company	Sales Office	Plant	Capacity Bbls. Daily
Arkansas Oil Ref. Co.	Fort Smith	Fort Smith	500
Arkansas Prod. & Ref. Co.	Little Rock	Little Rock	500
Airedale Refining Co.	El Dorado	El Dorado	1,000
Crude Oil Marketing Co.	El Dorado	El Dorado	1,500
El Dorado P. L. & Ref. Co.	El Dorado	El Dorado	2,000
R. C. Jones & Co.	El Dorado	El Dorado	1,000
New-Ark. Pet. Corp.	El Dorado	El Dorado	2,500
National Pet. Products Co.	Little Rock	El Dorado	1,500
Petroleum Products Co.	Shreveport, La	El Dorado	1,600
Pine Bluff Ref. Co.	Pine Bluff	Pine Bluff	1,000
Red River Refining Co.	Shreveport, La	El Dorado	2,000
Shippers Pet. Co.	El Dorado	El Dorado	1,500
F. H. Thwing Oil Co.	El Dorado	El Dorado	4,500
Union P. L. & Ref. Co.	Shreveport, La	El Dorado	3,500
Total			24,650

CALIFORNIA

Amalgamated Oil Co.	San Francisco	Los Angeles	3,500
American Oil Fields Co.	Los Angeles	Fellows	10,000
American Petroleum Co.	Coalinga	Coalinga	3,500
Asphaltum & Oil Co.	Los Angeles	Los Angeles	600
Associated Oil Co.	San Francisco	Avon	30,000
Associated Oil Co.	San Francisco	Gaviota	10,000
California Oil & Asphalt Co., Los Angeles		Vernon	500
Capitol Crude Oil Co.	Los Angeles	Santa Paula	100
Continental Pet. Ref. Co.	San Francisco	Coalinga	5,000
General Pet. Corp.	Los Angeles	Vernon	23,000
A. F. Gilmore & Co.	Los Angeles	Los Angeles	250
Gilmore Pet. Co.	Los Angeles	Vernon	750
Jameson Oil Co.	Los Angeles	Vernon	600
King Refining Co.	San Francisco	Kern River	300
Pacific-American Pet. Co. N.	N. Vernon	Vernon	300
Petroleum Products Co.	San Francisco	West Berkley	2,000
Pioneer Paper Co.	Los Angeles	Vernon	300
Producers Refining Co.	Bakersfield	Kern River	250
Puente Oil Co.	Los Angeles	Chino	600
Richfield Oil Co.	Los Angeles	Bakersfield	3,500
Richfield Oil Co.	Los Angeles	Los Angeles	10,000
Roseburg Oil Co.	Los Angeles	Los Angeles	1,000
St. Helena Pet. Co., Ltd.	Los Angeles	Fullerton	7,500
C. L. Seagar	Bakersfield	Tulare	500
Seaside Oil Co.	Summerland	Sumerland	1,000
Shell Co. of California	San Francisco	Coalinga	21,000
Shell Co. of California	San Francisco	Martinez	30,000
Standard Oil Co. of Cal.	San Francisco	Bakersfield	20,000
Standard Oil Co. of Cal.	San Francisco	El Segundo	35,000
Standard Oil Co. of Cal.	San Francisco	Richmond	6,500
Union Oil Co. of Cal.	Los Angeles	Avon	18,000
Union Oil Co. of Cal.	Los Angeles	Bera	10,000
Union Oil Co. of Cal.	Los Angeles	Maltha	3,000
Union Oil Co. of Cal.	Los Angeles	Oleum	25,000
Union Oil Co. of Cal.	Los Angeles	Santa Paula	1,000
Union Oil Co. of Cal.	Los Angeles	San Pedro	10,000
Union Oil Co. of Cal.	Los Angeles	Rodeo	1,000
Ventura Ref. Co.	Los Angeles	Fillmore	4,500
Vernon Ref. Co.	Los Angeles	Vernon	1,500
Wilshire Oil Co.	Los Angeles	Fellows	2,500
Wilshire Oil Co.	Los Angeles	Vernon	2,000
Total			306,050

COLORADO

Apex Refining Co.	Denver	Loomis	250
Raven Oil & Ref. Co.	Vernal, Utah	Rangely	500
The United Oil Co.	Denver	Florence	1,000
Total			1,750

IDAHO

Allen Oil Co.	Twin Falls	Twin Falls	300

GEORGIA

Atlantic Refining Co.	Philadelphia, Pa.	Brunswick	4,000

ILLINOIS

Central Refining Co.	Lawrenceville	Lawrenceville	10,000
Indiahoma Refining Co.	St. Louis, Mo.	East St. Louis	8,000
Indian Refining Co.	New York, N. Y.	Lawrenceville	5,000
Leader Oil Co.	Casey	Casey	1,300
McCombs Pet. & Ref. Co., Winchester, Ky.		East St. Louis	1,000
Premier Pet. & P. L. Co., Blue Island		Blue Island	2,500
Roxana Pet. Corp.	St. Louis, Mo.	East St. Louis	10,000
Southern Oil Corp.	Chicago	Riverside	1,000
Standard Oil Co. of Ind.,	Chicago	Wood River	12,800
The Texas Co.	Houston, Texas	Lockport	4,000
Wabash Refining Co.	Chicago	Robinson	1,000
Warren Oil Co. of N. Y.	Joliet	Joliet	1,000
White Star Ref. Co.	Detroit, Mich.	Wood River	1,000
Total			57,800

INDIANA

idated Oil Ref. Co.	Chicago, Ill.	East Chicago	2,000
Refining Co.	Chicago, Ill.	Columbus	2,000
Oil Ref. Co.	Columbus	Columbus	600
l Ref. Co.	Fairmount	Fairmount	300
Co.	Chicago, Ill.	East Chicago	12,000
Co. of Ind.	Chicago, Ill.	Whiting	40,000
			56,900

KANSAS

Company	Sales Office	Plant	Capacity Bbls. Daily
Assoc. Prod. & Ref. Corp., St. Louis, Mo.		El Dorado	1,000
Atlas Refining Co.	El Dorado	El Dorado	1,000
Commonwealth O. & R. Co., K. City, Mo.		Moran	800
Crystal White O. & R. Co., Allen, Okla.		Augusta	2,500
Derby Oil Co.	Wichita	Wichita	1,500
El Dorado Ref. Co.	El Dorado	El Dorado	3,000
Empire Refineries, Inc.	Tulsa, Okla.	Independence	500
Ford Oil Refining Co	Kansas City	Kansas City	400
General American Oil Co.	Tulsa, Okla.	Baxter Springs	1,000
Golden Rule Ref. Co.	Wichita	Wichita	750
Great Western O. & R. Co, Chicago, Ill.		Erie	1,000
Great Western O. & R. Co, Chicago, Ill.		Florence	3,000
Hutchinson Pet. Co.	Hutchinson	Hutchinson	1,000
Imperial Ref. Co.	Fort Worth, Texas	Cherryvale	2,000
Imperial Ref. Co.	Fort Worth, Texas	Osawatomie	1,000
Indiana Refining Co.	Rosedale	Rosedale	1,000
Kanotex Refining Co.	Arkansas City	Arkansas City	3,000
Kansas City Ref. Co.	Kansas City	Kansas City	2,500
Kansas Oil Ref. Co.	Coffeyville	Coffeyville	2,000
Lakeside Refining Co.	Chicago, Ill.	Augusta	1,000
Marigold Refining Co.	Wichita	El Dorado	1,500
Midco Petroleum Co.	Tulsa, Okla.	Arkansas City	6,000
Midland Refining Co.	El Dorado	El Dorado	5,000
Miller Petroleum Co.	Kansas City, Mo.	Humboldt	1,500
Miller Petroleum Co.	Kansas City, Mo.	Kansas City	1,000
Mutual Oil Co.	Kansas City	Chanute	1,000
National Refining Co.	Cleveland, Ohio	Coffeyville	4,000
Noco Petroleum Co., Oklahoma City, Okla.		Arkansas City	2,500
Red Ball Refining Co.	El Dorado	El Dorado	2,500
Standard Oil Co. of Kansas	Neodosha	Neodesha	12,000
Sinclair Refining Co.	Chicago, Ill.	Coffeyville	5,000
Sinclair Refining Co.	Chicago, Ill.	Kansas City	5,500
Sterling Oil & Ref. Co.	Wichita	Wichita	4,000
Vickers Petroleum Co.	Wichita	Potwin	2,500
White Eagle O. & R. Co., Kan. City, Mo.		Augusta	5,000
Total			88,950

KENTUCKY

Aetna Refining Co.	Louisville	Louisville	2,500
Dixie Belle Ref. Co.	Louisville	Louisville	1,500
Great Southern Ref. Co.	Lexington	Lexington	2,200
Great Southern Ref. Co.	Lexington	Pryse	1,000
Massey Ref. Co.	Scottsville	Scottsville	500
Neha Refining Co.	Lexington	Compton Junction	1,000
Petroleum Refining Co.		Latona	2,000
Standard Oil Co. of Ky.	Louisville	Louisville	5,000
Stoll Oil Ref. Co.	Louisville	Louisville	1,000
Total			16,700

LOUISIANA

Caddo Central O. & &R. Co., Shreveport		Shreveport	6,500
Calcasieu Ref. Co.	Lake Charles	Lake Charles	650
Crescent Refining Co.	Shreveport	Shreveport	1,200
International O. & G. Corp.	Shreveport	Shreveport	1,000
Island Ref. Corp.	New Orleans	Sarpy	10,000
Liberty Refining Co.	New Orleans	New Orleans	1,000
Louisiana Oil Ref. Corp.	Shreveport	Shreveport	6,000
Mexican Pet. Corp.	New Orleans	Destrahan	25,000
New Orleans Ref. Co.	Sellers	Good Hope	7,000
Louisiana Pet. Products Corp.	Shreveport	Bossier City	2,000
Pelican O. & R. Co.	New Orleans	Chalmette	300
Red River Ref. Co.,	Shreveport	Crichton	2,000
Shreveport P. & R. Corp.	Shreveport	Jewella	3,500
Sinclair Ref. Co.	Houston, Texas	Meraux	5,000
Standard Oil Co. of La.	New Orleans	Baton Rouge	40,000
Superior Syndicate	Shreveport	Vivian	2,000
The Texas Co.	Houston, Texas	Shreveport	3,000
Union Ref. & P. L. Co.	Shreveport	Oil City	2,000
Total			118,150

MARYLAND

Interocean Oil Co.	New York, N. Y.	Baltimore	1,000
Prudenial Oil Corp.	New York, N. Y.	Baltimore	6,000
Standard O. Co. of N. J., New York City		Baltimore	30,000
U. S. Asphalt Ref. Co.	New York, N. Y.	Baltimore	3,000
Total			40,000

MASSACHUSETTS

Beacon Oil Co.	Boston	Everett	12,000
Massachusetts Oil Ref. Co.	Boston	East Braintree	5,000
New England Oil Ref. Co.	Boston	Fall River	20,000
Total			37,000

MISSOURI

Lubrite Refining Co.	St. Louis	St. Louis	1,000
N. American O. & R. Co., Okla. City, Ok.		Sheffield	3,000
St. Joseph Viscosity Oil Co.	St. Joseph	St. Joseph	500
Standard Oil Co. of Ind.,	Chicago, Ill.	Sugar Creek	12,000
Wilhoit Refining Co.	Joplin	Joplin	1,000
Total			17,500

MONTANA

Great Northern Ref. Co.	Winnett	Winnett	750
Miles City Refining Co.	Miles City	Miles City	1,000
Montana Refining Co.	Billings	Billings	1,000
Total			2,750

Grand total United States 2,094,650

KANSAS & GULF COMPANY

PRODUCING
REFINING

TRANSPORTING
MARKETING

PETROLEUM
AND ITS
PRODUCTS

GENERAL OFFICES
TULSA
CHICAGO NEW YORK

NEBRASKA

Company	Sales Office	Plant	Capacity Bbls. Daily
L. V. Nicholas Oil Co.	Omaha	Omaha	500
Omaha Refining Co.	Omaha	Omaha	1,000
Total			1,500

NEW JERSEY

Barber Asphalt Paving Co., Phila., Pa		Maurer	3,000
Raritan Refining Co.	New York, N. Y.	New Brunswick	6,000
Standard Co. of N. J., New York City		Bayway	75,000
Standard Co. of N. J., New York City		Bayonne	85,000
Standard Co. of N. J., New York City		Claremont	15,000
Tide Water Oil Co.	New York, N. Y.	Bayonne	20,000
Vacuum Oil Co.	New York, N. Y.	Paulsboro	10,000
Warner-Quinlan Co.	New York, N. Y.	Warners	2,500
Total			216,500

NEW MEXICO

Peco Prod. & Ref. Co.	Tucumcari	Tucumcari	2,000

NEW YORK

Standard O. Co. of N. Y., New York City		Long Island City	25,000
Standard O. Co. of N. Y., New York City		Brooklyn	23,000
Standard O. Co. of N. Y., New York City		Buffalo	5,000
Vacuum Oil Co.	New York N. Y.	Olean	7,000
Wellsville Refining Co.	Philadelphia, Pa.	Wellsville	1,200
Total			61,200

OHIO

Canfield Oil Co.	Cleveland	Cleveland	2,000
Craig Oil Co.	Toledo	Toledo	2,000
National Refining Co.	Cleveland	Marietta	500
Ohio Refining Co.	Cincinnati	Cincinnati	1,000
Paragon Refining Co.	Toledo	Toledo	8,000
Rajah Oil & Ref. Co.	Youngstown	Youngstown	200
Solar Refining Co.	Lima	Lima	6,000
Standard Oil Co. of Ohio	Cleveland	Cleveland	25,000
Standard Oil Co. of Ohio	Cleveland	Toledo	10,000
Sun Company	Toledo	Toledo	3,000
Total			57,700

OKLAHOMA

Allied Refining Co.	Tulsa	Okmulgee	1,200
American Oil & Tank Line, St. Paul, Minn.		Cleveland	1,500
Anderson & Prichard	Oklahoma City	Cyril	600
Arbuckle Refining Co.	Wilson	Wilson	500
Ardmore Prod. & Ref. Co.	Ardmore	Ardmore	2,000
Atwood Refining Co.	Oklahoma City	Oklahoma City	1,000
Barnsdall Refining Co.	Tulsa	Barnsdall	3,000
Bay State Refining Co.	Tulsa	Healdton	1,000
Biery Oil Company	Franklin, Pa.	Cushing	1,800
Big Six Prod. & Ref. Co.	Sapulpa	Sapulpa	800
Bison Refining Co.	Stillwater	Quay	1,000
Blue Ribbon Oil & Ref. Co.	Walters	Walters	2,000
Bolene Refining Co.	Enid	Enid	2,000
Buffalo Refining Co.	Tulsa	Yale	1,000
Cameron Refining Co.	Ardmore	Ardmore	3,000
Canfield Refining Co.	Yale	Yale	1,000
Carter Oil Co.	Tulsa	Cartoco	15,000
Champlin Refining Co.	Enid	Enid	8,000
C. H. & W. Oil & &Gas Co.	Blackwell	Blackwell	2,500
Cherokee Refining Co.	Oilton	Oilton	1,000
Chestnut & Smith Corp.	Tulsa	Sand Springs	5,000
Chickawaw Refining Co.	Ardmore	Ardmore	7,000
Choate Oil Corp.	Oklahoma City	Oklahoma City	3,000
Choctaw Oil & Ref. Co.	Oil City	Oil City	150
Cogswell Refining Co.	Henryetta	Henryetta	2,000
Coleman-Nelson Corp.	Tulsa	West Tulsa	2,000
Constantin Refining Co.	Tulsa	Devol	8,000
Constantin Refining Co.	Tulsa	West Tulsa	5,000
Continental Refining Co.	Bristow	Bristow	2,500
Cosden & Company	Tulsa	West Tulsa	25,000
Crystal White Ref. Co.	Allen	Allen	1,800
Cushing Petroleum Co.	Oilton	Oilton	1,000
Daisy Belle Pet. Co.	Ardmore	Wilson	2,800
Damascus Ref. && Mfg. Co.	Lawton	Lawton	1,000
Duncan Refining Co.	Duncan	Duncan	1,000
Dun Refining Co.	Bartlesville	Hominy	2,000
Empire Refineries, Inc.	Tulsa	Cushing	3,500
Empire Refineries, Inc.	Tulsa	Oklahoma City	2,000
Empire Refineries, Inc.	Tulsa	Okmulgee	2,500
Empire Refineries, Inc.	Tulsa	Ponca City	2,500
Fairmount Refining Co.	Fairmount	Fairmount	2,000
Federal Oil & Ref. Co.	Oklahoma City	Cushing	300
Francis Oil & Ref. Co.	Oklahoma City	Francis	1,000
Frederick Oil & Ref. Co.	Frederick	Frederick	1,000
Garber Refining Co.	Garber	Garber	800
Globe Oil & Ref. Co.	Blackwell	Blackwell	2,000
Grandfield Ref. Co.	Grandfield	Grandfield	2,000
Great American Ref. Co.	Tulsa	Jennings	4,000
Gustafson & Spencer	Tulsa	Cushing	1,500
General American Ref. Co.	Tulsa	West Tulsa	2,000
Harvey Crude Oil Co., Kansas City, Mo.		Allen	2,000
Home Oil & Ref. Co., Fort Worth, Texas		Yale	2,000
Home Petroleum Co.	Oklahoma City	Oklahoma City	2,500
Illinois Oil Co.	Rock Island, Ill.	Cushing	2,500
Illinois Refining Co.	Tulsa	Bristow	2,500
Imperial Refining Co.	Fort Worht, Texas	Ardmore	5,000
Indiahoma Ref. Co.	St. Louis, Mo.	Okmulgee	4,000
Inland Refining Co.	Tulsa	Cushing	2,500
Lawton Refining Co.	Lawton	Lawton	2,000
Livingston Refiners Corp.	Tulsa	Devol	3,000
Livingston Refiners Corp.	Tulsa	Walters	3,000
Marland Refining Co.	Ponca City	Covington	1,000
Marland Refining Co.	Ponca City	Ponca City	5,000

Keystone-Ranger Refining Company

WICHITA FALLS, TEXAS

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Give him Keen and Woolf cold weather lubricating oils and old Jack will be the best man on your payroll.

"K-W" Specifications

100 @ 100 Viscosity	2	Color Pale
200 @ 100 Viscosity	2½	Color Pale
300 @ 100 Viscosity	3	Color Pale
500 @ 100 Viscosity	3¼	Color Pale
750 @ 100 Viscosity	3½	Color Pale
200 @ 100 Viscosity	5	Color Red
300 @ 100 Viscosity	5½	Color Red
500 @ 100 Viscosity	5½	Color Red

Zero Cold Test

100 @ 212 Viscosity Black Oil 0/5 C. T.

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KEEN & WOOLF OIL CO.

HOUSTON, TEXAS

KEEN & WOOLF
FOR PROFITS IN COLD WEATHER

Company	Sales Office	Plant	Capacity Bbls. Daily
Meridian Pet. Corp.,	Kansas City, Mo.	Hominy	800
Meridian Pet. Corp.,	Kansas City, Mo.	Okmulgee	3,000
Meridian Pet. Corp.,	Kansas City, Mo.	Ponca City	2,000
Midian Gasoline Co.	Tulsa	West Tulsa	4,000
Modern Refining Co.	Blackwell	Blackwell	1,000
Marigold Oil & Ref. Co.,	Wichita Kansas	Cushing	2,000
Mid-Continent Ref. Co.	Ringling	Ringling	1,000
North American O. & R. Co.,	Okla. City	Pemeta	1,500
Nyanza Refining Co.	Ardmore	New Wilson	3,250
Occident Oil Ref. Co.,	Wichita, Kansas	Cushing	1,200
Oil State Ref. Co.	Enid	Enid	2,000
Oilton Refining Co.	Oilton	Oilton	300
Oklahoma P. & R. Co.	Tulsa	Muskogee	2,000
Oklahoma Pet. & Gasoline Co.	Tulsa	Devol	2,500
Oklahoma-Texas Ref. Co.	Tulsa	Grandfield	1,500
Osage Mutual Oil & Ref. Co.	Pawhuska	Pawhuska	1,000
Phillips Higrade Ref. Co.	Tulsa	Okmulgee	2,000
Phoenix Refining Co.	Tulsa	Sand Springs	5,200
Pierce Oil Corp.	New York, N. Y.	Sand Springs	8,000
Polar Prod. & Gasoline Co.	Tulsa	Sapulpa	1,500
Producers & Refiners Corp.	Tulsa	Blackwell	2,000
Producers & Refiners Corp.	Tulsa	West Tulsa	6,000
Pure Oil Co.	Tulsa	Ardmore	7,000
Pure Oil Co.	Tulsa	Cushing	6,500
Republic Ref. Co.	Jennings	Jennings	1,000
Riverside Refining Co.	Oilton	Oilton	800
Rock Island Pet. Co.	Guthrie	Guthrie	1,500
Rock Island Ref. & P. L. Co.,	Duncan	Duncan	1,000
Sapulpa Refining Co.	Tulsa	Sapulpa	6,500
Shaffer Oil & Ref. Co.	Tulsa	Cushing	6,000
Sinclair Refining Co.	Tulsa	Cushing	5,500
Sinclair Refining Co.	Tulsa	Muskogee	700
Sinclair Refining Co.	Tulsa	Vinita	5,000
Southern Oil Corp.	Tulsa	Walters	2,500
Southern Oil Corp.	Tulsa	Yale	7,000
Southern Oil Refining Co.	Haskell	Haskell	1,000
Southwestern Oil Corp.	Oklahoma City	Enid	1,500
Sterling Refining Co.	Newkirk	Newkirk	2,000
Sun Oil Company	Philadelphia, Pa	Yale	4,000
Texas Company	Tulsa	West Tulsa	9,000
Tidal Refining Co.	Tulsa	Drumright	3,000
Tidal Refining Co.	Tulsa	West Tulsa	1,500
Transcontinental Oil Co.	Tulsa	Boynton	3,000
Union Oil & Ref. Co.	Grandfield	Grandfield	2,000
Victor Refining Co.	Tulsa	Yale	1,000
Yale Oil Corp.	Yale	Yale	1,200
Total			317,200

PENNSYLVANIA

Amber Oil & Realty Co.	Warren	Warren	250
American Oil Works	Titusville	Titusville	800
Atlantic Refining Co.	Philadelphia	Franklin	6,500
Atlantic Refining Co.	Philadelphia	Philadelphia	50,000
Atlantic Refining Co.	Philadelphia	Pittsburgh	4,000
Beaver Refining Co.	Pittsburgh	Oak Grove	500
Butler County O. & R. Co.	Bruin	Bruin	1,000
Canfield Oil Co.	Cleveland, Ohio	Corapolis	1,000
Chippewa Oil Co.	W. Bridgewater	W. Bridgewater	200
Conewango Refining Co.	Warren	Warren	3,000
Continental Ref. Co.	Oil City	Oil City	750
Crew Levick Co.	Philadelphia	Titusville	2,000
Crew Levick Co.	Philadelphia	Warren	1,000
Crystal Oil Works	Oil City	Rouseville	1,000
W. H. Daugherty & Son Ref. Co.,	Petrolia	Petrolia	200
Eastern Oil & Ref. Co.	Warren	Warren	500
Emery Manufacturing Co.	Bradford	Bradford	1,200
Emlenton Refining Co.	Emlenton	Emlenton	200
Empire Oil Works	Oil City	Oil City	600
Foco Oil Co.	Franklin	Franklin	500
Franklin Oil Works	Franklin	Franklin	250
Franklin Quality Ref. Co.	Franklin	Franklin	700
Freedom Oil Works	Freedom	Freedom	1,500
Glenshaw Refining Co.	Corapolis	Corapolis	600
Independent Ref. Co.	Oil City	Oil City	1,000
Interior Oil & Gas Corp.	Clarendon	Tiona	600
Island Petroleum Co.	Baltimore, Md.	Neville Island	1,000
Kendall Refining Co.	Bradford	Bradford	750
A. D. Miller's Sons Co.	Pittsburgh	Pittsburgh	1,000
Mutual Refining Co.	Warren	Warren	500
Mutual Sales Co.	Warren	Russell	500
Oil Creek Ref. Co.	Titusville	Titusville	500
Pure Oil Co.	Pittsburgh	Marcus Hook	3,500
Pure Oil Co.	Pittsburgh	Warren	1,500
Penn American Ref. Co.	Rouseville	Oil City	1,000
Penn American Ref. Co.	Rouseville	Oil City	2,000
Pennsylvania Products & Ref. Co.,	Warren	Eldred	1,000
Pennsylvania Refining Co.	Karns City	Karns City	100
Pittsburgh Oil Ref. Co.	Pittsburgh	Corapolis	1,000
Seneca Oil Works	Warren	Warren	500
Levi Smith Ref. Co.	Clarendon	Clarendon	1,000
Starlight Ref. Co.	Karns City	Karns City	100
Sun Company	Philadelphia	Marcus Hook	10,000
Superior Oil Works	Warren	Warren	400
Texas Company	New York, N. Y.	Marcus Hook	5,000
Tidioute Ref. Co.	Tidioute	Tidioute	2,000
Tiona Refining Co.	Philadelphia	Clarendon	1,000
Titusville Oil Works	Titusville	Titusville	1,000
United Ref. Co.	Warren	Warren	1,000
Valvoline Oil Wks., Ltd.,	New York City	East Butler	1,000
Vulcan Oil Ref. Co.	Corapolis	Corapolis	1,000
Warr-Penn Ref. Co.	Warren	Warren	400
Warren Refining Co.	Warren	Warren	1,700
Waverly Oil Works	Pittsburgh	Pittsburgh	800
White Oil Corp.	Clarendon	Clarendon	1,000
Wilburine Oil Wks., Ltd.,	New York City	Warren	600
Total			122,700

RHODE ISLAND

Standard Oil Co. of	New York, New York	East Providence	10,000
The Texas Co.	New York, N. Y.	Providence	5,000
Total			15,000

SOUTH CAROLINA

Standard O. Co. of N. J.,	New York City	Charleston	10,000

TENNESSEE

Company	Sales Office	Plant	Capacity Bbls. Daily
Victoria Oil & Ref. Co.	Nashville	Nashville	500

TEXAS

Abner Davis Ref. Co.	Fort Worth	Wichita Falls	1,000
Abner Davis Ref. Co.	Fort Worth	Fort Worth	50
American Refining Co.	Wichita Falls	Wichita Falls	5,000
Associated P. & R. Co.	Wichita Falls	Wichita Falls	1,000
Baney Refining Co.	Brownwood	Brownwood	500
Beacon Refining Co.	Henrietta	Henrietta	2,000
Beaver Electra Ref. Co.	Electra	Electra	2,500
Blue Ribbon Ref. Co.	Brownwood	Brownwood	500
H. E. Boner	Wichita Falls	Burkburnett	500
Brownwood Refining Co.	Wichita Falls	Brownwood	200
Buffalo P. & R. Co.	Sherman	Sherman	500
Burk-Tex. Refining Co.	Burkburnett	Burkburnett	4,000
Carolina Oil Co.	Nacogdoches	Nacogdoches	100
Chambers Ref. Co.	Corpus Christi	Corpus Christi	500
Consolidated Prod. & Ref.	Fort Worth	Tiffin	5,000
Corsicana Oil & Ref. Co.	Corsicana	Corsicana	500
Crescent Refining Co.	Denton	Denton	250
Crystal Pet. & Ref. Co.	Burkburnett	Burkburnett	1,000
Dalford Oil & Ref. Co.	Fort Worth	Fort Worth	5,000
Deepwater Oil Refineries	Houston	Houston	3,000
Edmonds Oil & Ref. Co.	Fort Worth	Fort Worth	3,500
Edmonds Oil & Ref. Co.	Fort Worth	Bridgeport	1,000
Eggleston Oil & Ref. Co.	San Antonio	Somerset	1,200
Elliott Jones & Co., Inc.	San Antonio	San Antonio	4,000
Fay Petroleum Co.	South Bend	South Bend	1,200
Empire Refineries, Inc.	Tulsa, Okla.	Gainesville	10,000
Farmers Oil & Ref. Co.	Texarkana	Texarkana	2,000
Four States Ref. Co.	Texarkana	Texarkana	500
Freeport Gas Co.	Houston	Bryanmound	5,000
Galena-Signal Oil Co.	Houston	Houston	3,000
General Oil Co.	Houston	Wichita Falls	1,000
General Oil & Ref. Co.	Eastland	Abilene	1,500
General Oil & Ref. Co.	Eastland	Eastland	1,500
Gorman Home Ref. Co.	Gorman	Gorman	2,000
Graham Refining Co.	Graham	Graham	1,000
Grayburg Refining Co.	San Antonio	San Antonio	2,000
Great Texas O. & R. Co.	Fort Worth	De Leon	1,000
Gulf Refining Co.	Houston	Fort Worth	15,000
Gulf Refining Co.	Houston	Port Arthur	60,000
Hagaman Refining Co.	Ranger	Tiffin	800
Hagaman Refining Co.	Ranger	Tiffin	1,600
Hercules Petroleum Co.	Dallas	Dallas	2,000
Humble Oil & Ref. Co.	Houston	Burkburnett	1,600
Humble Oil & Ref. Co.	Houston	Baytown	12,000
Humble Oil & Ref. Co.	Houston	San Antonio	2,000
Interstate Gasoline Co.	Wichita Falls	Iowa Park	2,500
Iowa Park Prod. & Ref. Co.	Iowa Park	Iowa Park	2,500
Keen & Woolf Oil Co.	Houston	Houston	1,500
Keystone-Ranger Ref. Co.	Wichita Falls	Wichita Falls	2,000
LaPorte Oil & Ref. Co.	Houston	Morgans Point	1,000
Lewis Oil Corp.	Dallas	Burkburnett	1,000
Liberty Refining Co.	Cisco	Cisco	1,000
Lone Star Oil & Ref. Co.	Wichita Falls	Wichita Falls	3,500
Magnolia Petroleum Co.	Dallas	Corsicana	2,000
Magnolia Petroleum Co.	Dallas	Fort Worth	12,000
Magnolia Petroleum Co.	Dallas	Beaumont	45,000
Manhattan Oil Ref. Co.	Wichita Falls	Burkburnett	3,500
Miller Refining Co.	Fort Worth	Wichita Falls	2,500
Montrose Oil Ref. Co., Inc.	Fort Worth	N. Fort Worth	4,000
Chas. F. Noble O. & G. Co.	Tulsa, Okla.	Burkburnett	5,000
Nortex Refining Co.	Fort Worth	Burkburnett	2,000
North Texas O. & R. Co.	Greenville	Greenville	2,500
Orient Petroleum Co.	Wichita Falls	Wichita Falls	2,000
Oriental Oil Co.	Dallas	Dallas	5,000
Owens Refining Co.	Minerva	Minerva	1,500
Owenwood Oil Corp.	Fort Worth	Burkburnett	2,000
Panhandle Refining Co.	Dallas	Wichita Falls	4,500
Panther City O. & R. Co.	Fort Worth	Fort Worth	2,000
Patterson Oil Co.	Brownwood	Brownwood	1,000
Pa-Tex Pet. Co.	La Porte	La Porte	800
Pierce Oil Corp.	Fort Worth	Fort Worth	10,000
Pierce Oil Corp.	Fort Worth	Texas City	8,000
Pioneer O. & R. Co.	San Antonio	Somerset	1,000
Ranger Ref. & P. L. Co.	Ranger	Ranger	2,500
Ranger-Wichita O. & R. Co.	Wichita Falls	Wichita Falls	2,500
Reece S. Allen Ref. Co.	Wichita Falls	Amarillo	2,000
Rex Oil & Ref. Co.	Sweetwater	Sweetwater	1,000
Rex Refining Co.	De Leon	De Leon	1,500
Rio Grande Oil o.	El Paso	El Paso	2,000
Royal Blue Ref. Co.	Graham	Graham	500
Seaboard Oil & Ref. Co.	Galveston	Orange	350
Slimp Refining Co.	San Antonio	Somerset	1,000
Star Ref. & Prod. Co.	Fort Worth	Fort Worth	1,500
State Ref. Assn.	Dallas	Grand Prairie	1,500
Sinclair Refining Co.	Houston	Houston	4,000
Sunshine State O. & R. Co.,	Wichita Falls	Wichita Falls	2,500
The Texas Co.	Houston	Dallas	15,000
The Texas Co.	Houston	Port Arthur	45,000
The Texas Co.	Houston	Port Neches	15,000
Texas Oil & Gas Refineries	Brownwood	Brownwood	1,000
Texas Oil Products Co.	Waxahachie	Waxahachie	2,000
Texhoma Oil & Ref. Co.	Wichita Falls	Wichita Falls	3,000
Tex-Oil Refining Co.	Wichita Falls	Burkburnett	800
Thrall Refining Co.	Thrall	Thrall	400
Tidal-Western Oil Corp.	Tulsa, Okla.	Burkburnett	3,000
Tiger Ref. & P. L. Co.	Fort Worth	Breckenridge	2,005
Trans-Atlantic Ref. Co.	Houston	Houston	1,000
Transcontinental Oil Co.	Fort Worth	Fort Worth	5,000
Travis Refining Co.	Burkburnett	Burkburnett	1,000
Trinity Oil Corp.	Dallas	Dallas	3,500
Trinity Refining Co., Inc.	Fort Worth	Fort Worth	1,000
Turnbow Oil & Ref. Co.	Houston	Houston	500
Uniform Gasoline & Pet. Co.,	Wichita Falls	Burkburnett	3,500
Virginia Refining Co.	Fort Worth	Dublin	2,500
Waco Refining Co.	Waco	Waco	2,000
Waggoner Refining Co.	Electra	Electra	2,500
Walker Cons. Pet. Co.	Dallas	Iowa Park	3,000
Weatherford Refining Co.	Weatherford	Weatherford	500
White Eagle O. & R. Co.	Fort Worth	Fort Worth	5,000
White Oil oCrp.	Houston	Houston	3,000
World Refining Co.	Fort Worth	Bridgeport	500
Total			445,350

Building Business Around a Trade-Mark

Nourse finds it pays to connect lubricating oils with a trade-mark play on his name

By Jack Nourse

When we were discussing whom we should ask to write an article on the use of the trade-mark in selling oils, and wrote some of our friends for suggestions, the name of Jack Nourse was unanimously agreed upon. Nourse oils throughout the Nourse Oil Company's territory are almost as well known as the need for oils is known. So here is Jack Nourse's story—told about his firm because we asked for his personal observations.—Editor.

TRADE-MARKS convey to the people the idea of personality and link up the firm name with the product which it desires to put across.

Your name and your trade-mark should be synonymous with your product. When the public thinks of pickles and preserves, they think of Heinz. When they think of chewing gum, they think of Spearmint. When they think of hats, they think of Stetson. When they think of soap, they think of Ivory. When they think of underwear they think of B. V. D.'s and when they think of lubricating oils and greases, I want them to think of the Jack Nourse Oil Company.

To the feminine public Lydia Pinkham stands for pills and while Lydia has been dead for years, yet she is a living, breathing personality to the public and suffering women write the most intimate details of their troubles to Lydia Pinkham and that firm fosters and encourages this correspondence because it sells more pills for them.

My idea is, when I am dead and gone to still have the name of Jack Nourse and the trade-mark of the "Nourseman" to stand for lubrication. My name of Nourse, which is pronounced as if it were spelled N-o-r-s-e caused me to easily and naturally turn to the old-time Vikings who were the Norsemen who came out of the North, a hardy race of men, big in statue, fierce of aspect and the grandest race of scrappers the world had at that time and with the nerve and hardihood to sail the seven seas in little open boats, propelled by oars and descend upon the enemy, regardless of what the conditions were and the numerical odds, and tie into them. The Norsemen have stood always since their time as a mighty race of fighters.

The men who buck the independent oil business alone and unaided, who go against the mighty millions of dollars arrayed against them in an advertising way, must have nerve and daring in their methods characteristic of the old Norsemen. So, it naturally fits into my business. Likewise, because of its association with my name, I was able to copyright it.

The next thing was to get the public acquainted with the name Nourse and the Norsemen and hook it up with lubrication so all brands and all advertising are hooked up around the word "Nourse," Nourse motor oil, Nourse tractor oil, "Nourse" this and "Nourse" that, so the whole field of lubrication takes the ultimate consumer and the dealer into the word "Nourse."

Our salesmen are drilled to use this word "Nourse" as a synonym for oil and grease. If Jack Nourse says certain things about lubrication are so, then they are, and Nourse means good oil and good grease.

Our advertisements all feature the Nourseman and our trade-mark is a reproduction of the hardy Norseman with his armor, his shield and his war club and his horned helmet. That trade-mark on all our merchandise means the best there is in lubrication and gives our salesmen courage and enthusiasm to fight for the business.

As we develop new articles or new lubrication we link it around the "Norseman" and the Nourse Oil Company and the Norseman looms up strong on all signs and stationery.

The power, the punch and the personality of my business are all embodied in my trade-mark.

Tulsa, Okla., Jan. 16.—Exclusive rights for the sale and distribution of the Ballard oil and gas separator has been obtained by H. H. Goddard, who has resigned as vice president of the Chestnut and Smith Corporation to devote his time to the new business. The distribution of the Ballard separator will be handled through the Goddard Manufacturing Company, with offices at 1028 Mayo Building, in Tulsa.

Mr. Goddard was vice president of the Chestnut and Smith Corporation for three years, and aso was vice president and general manager of the Smith Separator Company, distributors of the Smith separator. He is well known in the field, and his previous experience in this line will be of value in his new business.

The Ballard oil and gas separator patent rights are owned by the Sun Company, with which company Mr. Goddard has closed his contract.

Fort Worth, Texas, Jan. 17.—The Imperial Oil Marketing Company has been organized under the laws of the State of Oklahoma to take over the entire marketing business of the Imperial Refining Company. The output of the latter concern's refining plant at Ardmore, Oklahoma has been purchased. Headquarters of the Marketing Company are maintained on the 14th floor of the W. T. Waggoner building in Fort Worth, with the following officers: C. L. Mayhall, president; J. R. Trisler, vice president and manager of the light oil department; and R. M. Moon, vice president and manager of the fuel oil department.

UTAH

Utah Oil Refining Co., Salt Lake City	Salt Lake City		4,000

WEST VIRGINIA

Elk Refining Co.	Charleston	Falling Rock	1,000
Ohio Valley Ref. Co.	St. Marys	St. Marys	1,000
Pure Oil Co.	Pittsburgh	Cabin Creek	3,000
Standard O. Co. of N. J., New York City		Parkersburg	2,000
Warner-Quinlan Co.	New York, N. Y.	Cairo	500
Total			7,500

WYOMING

Alliance Oil & Ref. Co.	Thermopolis	Thermopolis	1,000
Lovell Refinery	Lovell	Lovell	500
McWhorter-Osage Ref. Co.	Osage	Osage	500
Midwest Refining Co.	Casper	Casper	35,000
Midwest Refining Co.	Casper	Greybull	10,000
Midwest Refining Co.	Casper	Laramie	5,000
Mutual Ref. & Prod. Co.	Glenrock	Glenrock	2,500
National Ref. & P. L. Co.	Casper	Casper	3,000
Northwestern Oil Ref. Co.	Cowley	Cowley	1,000
Producers & Refiners Corp.	Denver, Colo.	Casper	10,000
Riverton Wyoming Ref. Co.	Riverton	Riverton	2,500
Standard Oil Co. of Indiana	Casper	Casper	10,000
Standard Reserve Oil Co.	LeRoy	LeRoy	500
U. S. Oil & Ref. Co.	Lusk	Lusk	500
Wind Rixer Ref. Co.	Lander	Lander	7,500
Wyatt Dil & Ref. Co.	Fetterman	Fetterman	500
Total			77,500

REFINERIES BUILDING

ARKANSAS

Company	Location of Plant	Capacity
Globe Oil & Ref. Co.	El Dorado	2,000
Grison Refining Co.	El Dorado	3,000
Lion Oil & Ref. Co.	El Dorado	2,500
Pioneer Fuel Oil Corp.	Upland	2,000
Rose City Pet. Co.	Little Rock	1,000
Total		10,000

COLORADO

Sawyer Pet. Co.	Grand Valley	1,500

INDIANA

Indiana Oil Ref. Co.	Columbus	500

KANSAS

Fugatt-Giles Oil Corp.	Wichita	250
McWhorter-Chanute Ref. Co.	Chanute	2,000
Total		2,250

KENTUCKY

Massey Refining Co.	Scottsville	500
Mayo Oil Service Co.	Ashland	1,000
Oakline Pipe Co.	Bowling Green	3,000
E. R. Riggs	Bowling Green	300
Total		7,050

LOUISIANA

General Oil & Ref. Co.	Homer	1,000
Great Southern P. & R. Co.	Shreveport	2,000
Paramount Pet. Corp.	Shreveport	3,000
Total		6,000

MISSOURI

Willis Smiley P. & R. Co.	Richards	1,000

MONTANA

Miles City Oil & Ref. Co.	Miles City	2,000

OHIO

Stellar Refining Co.	Marne	100

OKLAHOMA

Big Diamond Oil & Ref. Co.	Addington	1,000
Billings Refining Co.	Billings	1,500
Golden Belt Refining	Oklahoma City	2,000
Greater Oklahoma Oil Corp.	Billings	2,000
Old Hickory P. & R. Co.	Dilworth	800
Total		7,300

TEXAS

Able Refining Co. Houston	Houston	500
Great Texas O. & R. Co.	Breckenridge	5,000
Humphreys-Pure Oil	Beaumont (planned)	25,000
Keystone Refining Co.	Dublin	1,000
Mogul Prod. & Ref. Co.	Houston	500
Total		7,000
Grand total refineries building United States		44,700

MEXICAN EXPORTS FOR TWO YEARS

Exports from Mexico of petroleum and its products by months for the year 1921 compared with figures for 1920 follow:

Months	1921 Barrels	1920 Barrels
January	18,481,136	8,061,290
February	16,670,678	7,687,944
March	15,808,407	10,288,384
April	16,251,718	10,092,312
May	14,066,043	11,255,532
June	17,591,966	10,576,280
July	6,241,256	12,275,022
August	5,582,000	15,438,008
September	17,633,938	17,985,984
October	16,746,341	17,050,948
November	17,571,011	16,151,395
December	19,298,084	17,608,703
Totals	181,942,578	154,471,802

Houston, Texas, Jan. 18.—During the past ten days, the Mexican Gulf Oil Company has completed Nos. 5, 19 and 20 Toteco in the Toteco district of the South Mexican fields, each well having an initial production of between 50,000 and 60,000 barrels. No. 19 was completed at 2088 feet, sub-sea level 1400 feet. The other two were completed at about the same depth. The Mexican Gulf has four other wells in Toteco with casing set.

Mexican Production Will Continue Around 750,000 Barrels Daily

TAMPICO, MEXICO, Jan. 14.—Well informed oil circles estimate that the average daily production of the Mexican fields will continue around the 750,000 barrel mark during January, and probably for several months.

During December a total of more than 19,000,000 barrels of oil and products were shipped from Mexico, a large part of which went to the United States. The December exports exceeded any month in the history of the Mexican oil fields and it is estimated that fully 19,000,000 barrels will be exported in January.

The Mexican fields during 1921 exported a total of 181,942,578 barrels of petroleum and its products, against 154,471,802 barrels in 1920, thus breaking all records. A large part of the total production of the Mexican fields is exported, only a small per cent of the production being used in Mexico.

In the Toteco-Cerro Azul section, the Mexican Gulf Oil Company is running around 135,000 barrels daily from its wells while the International is running approximately the same amount. The Huasteca is running approximately 230,000 barrels a day from its wells in the same district, giving that area a daily average production of at least 500,000 barrels.

Between 100,000 and 150,000 barrels daily will be produced by the old wells in Zacamixtle, Amatlan and the other older fields, which have shown so much salt water. Panuco can be expected to produce an average of 100,000 barrels daily.

A positive statement was made this week that no salt water has appeared in any well in the Toteco-Cerro Azul section, notwithstanding reports to the contrary. It is further stated that salt water is not expected to show in this district for some time, especially in view of the reduced flow outlined for the wells.

Tampico, Jan. 14.—During the month of December, the total exports of petroleum and petroleum products was a record over any other month in the history of the Mexican fields, reaching an aggregate of more than 19,000,000 barrels. The exports by companies making the shipments during the last month in 1921 follows:

	Barrels
Transcontinental	3,555,939
Huasteca	2,699,598
Aguila	2,582,348
International	1,928,583
Corona	1,511,902
Mexican Gulf	1,315,488
Texas	1,276,963
Agwi	964,416
Freeport	620,033
Island	574,238
East Coast	476,344
Cortez	377,933
New England	339,181
National Oil	245,712
Continental Mex.	189,437
Penn Mex.	112,669
Interocean	109,416
National Petroleum	107,741
U. S. Mex.	106,163
Swiftsure	87,790
Pierce	78,433
Cosmos	37,757
Total	19,298,084

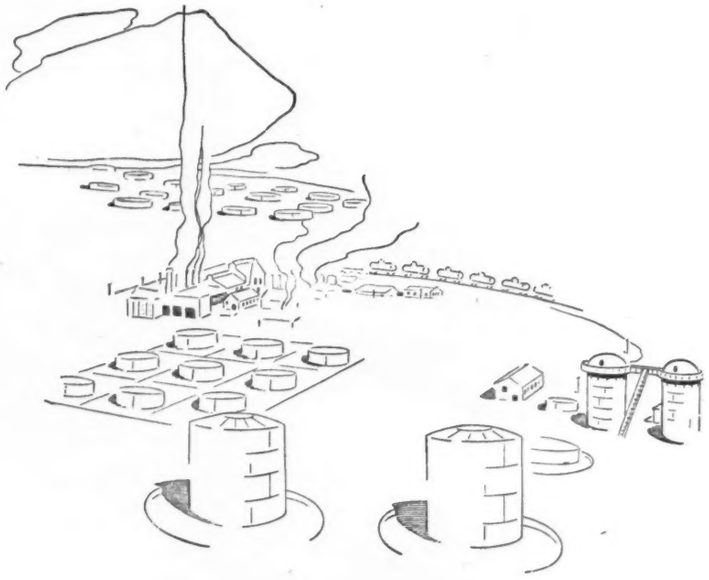
SINCLAIR OILS

Petroleum Products of Quality

SINCLAIR OILS

GASOLINE LUBRICANTS
KEROSENE PARAFFIN WAX
NAPHTHA FUEL OIL
GAS OIL ROAD OIL

SINCLAIR REFINING COMPANY
Cable Address "Sorcorp"
111 W. Washington St., Chicago Ill.
SINCLAIR OIL BUILDING 45 Nassau St., New York



NO JOB IS TOO LARGE— NO JOB IS TOO SMALL!

Whether you require 55,000-barrel storage tanks, small "run-down" tanks, stills, agitators, refined products tanks, water storage and fire protection tanks (or any other product made from steel plates) the DES MOINES organization can design, fabricate, and erect the material in any part of the world on short notice.

DES MOINES activities cover also every type of Oil Field structure—warehouses, power houses, office and store buildings, casing-head gas plants—all these and similar structures have been designed, fabricated, and erected in every section of the globe.

As one of the largest fabricators of structural steel and steel plate work, this Company is possessed of such knwledge and experience in the designing, fabrication and erection of oil field structures of all kinds, large and small, that the privilege of consulting the corps of engineers maintained at each of our three plants (no obligation incurred) will be found most advantageous.

Write to the nearest office, stating your problem, and one of our engineers will reply.

Catalogue No. 84 will be sent on request

Pittsburgh-Des Moines Steel Co.

884 CURRY BLDG., PITTSBURGH, PA.

DISTRICT OFFICES:

New York Chicago Dallas Des Moines Detroit
San Francisco Washington Chatham, Ont.
Montreal, Que.

PLANTS:

Pittsburgh, Pa. Des Moines, Ia. Chatham, Ont.

Canadian Des Moines Steel Co., Ltd.
Chatham, Ont. Montreal, Que.

DES MOINES

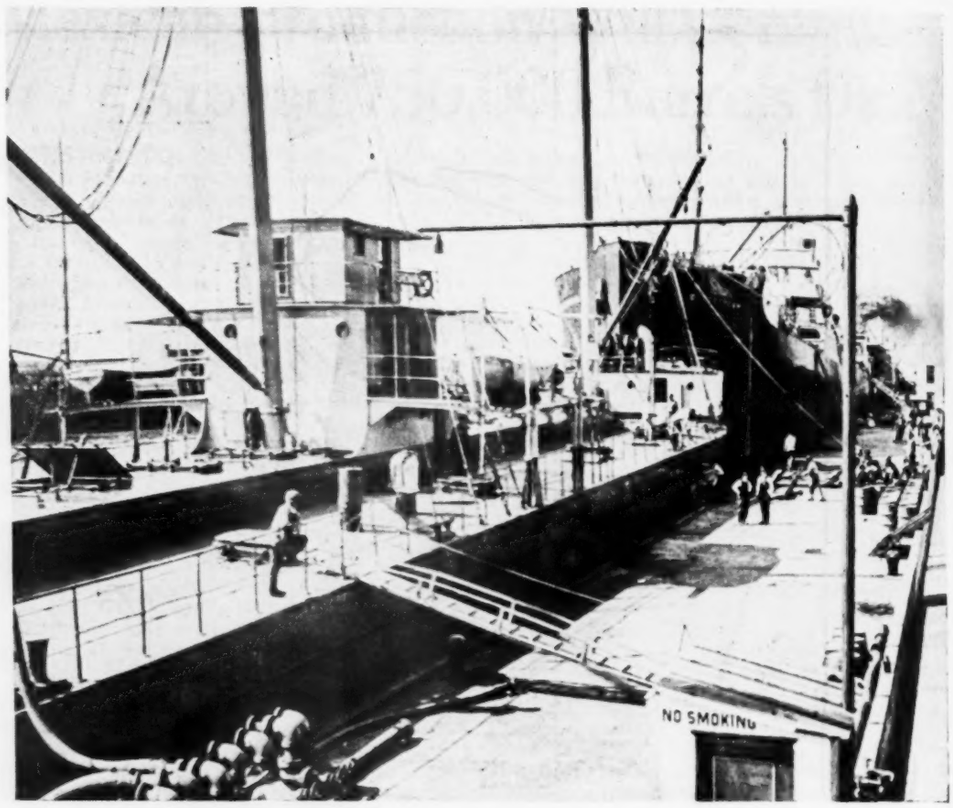
Beaumont and Port Arthur Ship Channel Refining Center

By Harvey W. Gilbert
Member Waterway Committee

BEAUMONT, TEXAS, Jan. 16.—Seven years ago, New York held first place as the world's greatest oil refining center. Plants located on the Beaumont and Port Arthur ship channel are now running approximately 200,000 barrels of crude oil daily, and the honors have been taken from New York and handed to the Beaumont and Port Arthur channel.

On this waterway are located the plants of the Gulf Oil Corporation, Magnolia Petroleum Company and The Texas Company, which has two large refineries on the channel. In addition to this, the Magnolia Petroleum Company has purchased another site nine miles below Beaumont, consisting of 800 acres. The Humphreys-Pure Oil Company has purchased, within the past thirty days, 675 acres, on which a 50,000 barrel refinery will be in operation in twenty-four months. The pipe line to this last addition to the ship channel is now being laid and will be completed as soon as possible. B. G. Dawes, president of the Pure Oil Company, as well as Colonel A. E. Humphreys, of the Humphreys-Pure Oil Company, state that a plant will be established by these allied interests. In addition, two other large refining concerns are laying plans to build refineries here within the next twelve months. The oil tonnage on this waterway exceeds that of Houston, Galveston and New Orleans combined.

Sixty per cent of the petroleum production of Kansas, Oklahoma and Texas, as well as of Louisiana, is brought to this channel and refined into the finished petroleum products. The waterway has a great advantage over a great many other places, in the fact that same is dug throughout in clay and has a large volume of fresh moving water passing through same, the waters of the Sabine and Neches rivers going out through its passageway. Beaumont and Port Arthur are blessed with a broad, farsighted and progressive citizenship, and are putting forth every effort to complete the 35-foot project by 1925. This waterway is supplying the Japanese and Chinese trade largely through the Magnolia Petroleum Company's activities; in fact, the Orient is now getting the large bulk of its refined oil from this waterway. The tonnage for the year 1920 for this waterway was as follows:



A busy scene at Port Arthur on the Beaumont-Port Arthur ship channel

	Tons
Sabine District, including Port Arthur, Beaumont, Orange, Port Neches and Sabine Pass	11,846,159
Galveston District, which includes the city of Galveston, Galveston harbor, Texas City, Port Bolivar and Houston	10,609,583
Port of New Orleans, which includes Baton Rouge and all the other sub ports in the district	10,513,863
Beaumont proper	2,960,000
Houston ship channel	1,210,000
Mobile, Ala.	1,655,000
Jacksonville, Fla.	2,500,000
Charleston, S. C.	2,230,000
Savannah, Ga.	2,147,000

The Beaumont and Port Arthur ship channel is served by rail from one end to the other, and by Stone & Webster Electric Interruban from Beaumont to Port Arthur, and is ideal in every way for all industrial establishments.

Wichita Falls, Texas, Jan. 18.—A meeting of the Western Petroleum Refiners Association was held here at noon today with H. G. James, secretary of the association, presiding. Representatives of all the Wichita Falls, refining plants and from nearby refining centers were present at the meeting. Mr. James announced during his talk to the gathering that the Wichita Falls office of the association would be discontinued effective immediately.

CLOSE TULSA OFFICE

Tulsa, Okla., Jan. 16.—It was officially announced here this morning that the refined oil sales office of the Standard Oil Company (New Jersey) which was opened here a short time ago at 507 Exchange National Bank building, has been discontinued. No reason was assigned for the closing of the office.

H. F. Miller, who has been in charge of the Standard of New Jersey's office here, will continue his duties at 507 Exchange National as a representative of the Carter Oil Company, Standard of New Jersey, producing subsidiary in the Mid-Continent field.

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GOULDS

Standard of California Getting Set for Foreign Development

LOS ANGELES, CAL., Jan. 14.—Another link in the ambitious chain of plans for the development of oil reserves in foreign lands has been forged by the Standard Oil Company of California, in acquiring a quarter interest in the Vanderlip Syndicate, involving a first option on all the oil concessions of this syndicate in the Province of Kamchatka, Siberia.

The Vanderlip Syndicate is composed of 64 units. Sixteen of these units were owned by California capitalists, and it is understood that this is the block purchased by the Standard of California. The syndicate is owner of sweeping concessions in the Kamchatka peninsula covering the commercializing of coal, oil and timber lands, furs and fisheries, etc.

The syndicate is a holding company, and it is expected that the other units of its stock will be disposed of to development companies. The concessions from the Soviet Government were obtained about two years ago, and cover the rights to alternating sections of land in the prospective area. The Standard of California is said to have made a complete survey of the oil possibilities of the area, and has acquired the interest with a view of developing the territory. It is not expected, however, that any steps will be taken towards drilling until the Government of Russia is stabilized, and officially recognized by the United States.

It is currently reported that the Standard of California is negotiating with Eastern financiers for securing $40,000,000 for the use in further expansion. Whether bonds will be issued or additional stock sold is not yet divulged.

The Standard recently closed a deal with the Transcontinental Oil Company, by which it secured an interest in the latter's vast holdings in Colombia, and is reported to be planning an intensive program of development off the west coast of this country.

The same company has considerable territory under control in the Philippine Islands, and is at present drilling one well there. It is also prospecting in the extreme northwest, with an idea of outlining possible oil-bearing territories, and has recently secured a firm footing in the producing area of the Mountain States. A subsidiary company has been formed to operate in Montana, and drilling has been started.

The California Standard is the biggest producing unit of the Standard group, and is the biggest producing organization in the world. During the year 1920 the daily average production of the company was about 79,000 barrels of oil, and the figures are expected to show about 92,000 barrels a day for the entire year of 1921. It owns what is said to be the biggest oil refinery in the world, at Point Richmond, San Francisco Bay, the plant having a charging capacity of 65,000 barrels of oil a day. The company ships petroleum products to all the countries touching the Pacific, and exports lubricating oils to European markets in large volume.

More than 86 per cent of the eligible employees of the Standard are stockholders of the company, under a plan put into effect on June 1, 1921.

California Produced 114,849,924 Barrels Oil During Last Year

LOS ANGELES, Jan. 17.—Final figures on the production of oil in California during the year 1921 prepared by the Standard Oil Company show 114,849,924 barrels. The 1921 production established a new record for the state and exceeded 1920 figures by over 9,000,000 barrels. The daily average production for the past year was 314,650 barrels.

The daily average production for December was 325,478 barrels, and 45 wells were completed during the month. The increase in production for December came mostly in the field affected by the strike of oil workers during the early fall.

Total stocks of crude oil held in California at close of year were 35,021,912 barrels, showing an increase in stocks during the year 1921 of 12,781,000 barrels. In other words, production exceeded consumption during the year by a daily average of 35,018 barrels.

Summary of developments and production for all California fields, for December, is as follows, according to the Standard Oil Company of California:

Field	New rigs	Drilling	Completed during mo.	Abandoned during mo.	Producing	Production per day
Kern River	2	25	1	..	2,207	10,245
McKittrick	1	9	..	..	350	5,000
Midway-Sunset	11	78	22	..	2,707	127,570
Lost Hills-Belridge	2	9	..	..	612	9,000
Coalinga	1	6	2	..	1,176	34,068
Lompoc and Santa Maria	..	10	..	..	416	14,275
Ventura County and Newhall	3	30	..	..	526	6,766
Los Angeles and Salt Lake	..	7	2	..	671	3,522
Whittier-Fullerton	0	123	6	1	1,116	88,064
Huntington Beach	17	150	12	..	51	14,938
Summerland	..	..	..	..	137	158
Watsonville and miscellaneous	4	60	..	..	9	65
Total	50	516	45	1	9,978	325,478

Total crude oil stocks, December 31, 1921, 35,021,912 barrels.
Total shipments from fields, December, 1921, 8,554,259 barrels.

California Production for 1921

The year 1921 established a new record for petroleum production in California, and exceeded production in 1920 by 9,128,738 barrels. The 1920 production was 105,721,186 barrels, and the 1921 production, 114,849,924 barrels.

The average production for the year 1921 was 314,657 barrels per day, and the average daily production by months was as follows:

January	331,186 barrels	July	331,252 barrels
February	327,864 barrels	August	323,616 barrels
March	337,683 barrels	September	*264,314 barrels
April	338,981 barrels	October	*227,957 barrels
May	337,101 barrels	November	*293,323 barrels
June	337,625 barrels	December	325,478 barrels

*Strike conditions.

Summary of Field Operations and Production—1921

Field	Rigs completed during year	Wells completed during year	Wells abandoned during year	Production for year	Production per day
Kern River	77	75	2	6,715,680	18,399
McKittrick	23	3	4	2,056,101	5,633
Midway-Sunset	307	260	17	46,871,740	128,415
Lost Hills-Belridge	29	15	1	3,261,281	8,935
Coalinga	41	54	12	12,340,637	33,810
Lompoc and Santa Maria	14	20	2	5,563,324	15,242
Ventura County and Newhall	70	43	..	2,375,479	6,507
Los Angeles and Salt Lake	11	9	1	1,344,926	3,685
Whittier-Fullerton	151	147	8	31,681,417	86,799
Huntington Beach	256	78	..	2,561,149	7,017
Summerland	..	..	..	54,155	148
Watsonville and miscellaneous	37	..	..	24,035	66
Total	1,016	704	47	114,849,924	314,657

Total crude oil stocks December 31, 1920, 22,240,271 barrels. Increase during year, 12,781,641 barrels. Total crude oil stocks December 31, 1921, 35,021,912 barrels. Daily increase during year, 35,018 barrels.

NOTE—Figures for December received too late to be included in table in statistical section.

Casper, Wyo., Jan. 14.—The Wyoming Oil World, published and edited by A. J. Hazlett, one of the best known oil writers in the United States, celebrated the new year by changing the name to Inland Oil Index. It was formerly a four-page paper, but Mr. Hazlett announces that he expects to make it an eight-page publication in the future. The name was changed to permit a broader scope of handling oil news.

Los Angeles, Jan. 13.—The Murvale, the Boston Pacific and the Caribou Oil Companies will develop leases in the Government Naval Reserve, west side Kern County, according to an announcement involving the settlement of claims between these companies and the Government. The permits specify a sliding scale for royalty to the Government, ranging from one-eighth to one-quarter.

Several Wells at Huntington; Watching Richfield Deep Stuff

LOS ANGELES, CAL., Jan. 14.—In spite of the fact that parts of the Huntington Beach field were submerged in water for several days during the recent heavy rainfall in Southern California, drilling has been continued wherever it was possible, and several wells have just been put on production.

Jim O'Donnell has completed what looks like a 1000-barrel well at 3741 feet, from the lower sand. Miley's No. 2 has settled down to 650 barrels at 2752 feet. Bill Kammerer has completed a 250-barrel well for the Holly Sugar Company, and R. W. Edens has a 200-barrel well with his No. 1, though the well is not yet completed.

Petroleum Midway has installed a McEvoy screen on its Richfield-Yorba test at 4805 feet, and a test for production will be made. Ridge Oil Company is drilling below 4540 feet, through cap rock, and this test is being watched with interest.

Deeper drilling in the Richfield district of the general Whittier-Fullerton section is attracting the interest of all the operators of the State. The original producing level for this field was around 3100 feet. The Union completed its first Chapman gusher at 3168, and it flowed 5000 barrels a day for several months. Since that time the Standard and Union have developed a deeper pay, practically 1200 feet below the 3100-foot level, and many of the wells of the field as being taken to this level now. Last week the Standard completed No. 16 Kramer, offsetting the Union's Chapman lease, for 500 barrels at 4332 feet. It is considered likely that many of the wells previously completed at the upper level will be drilled to the lower sand as soon as their production declines at the present depth.

Drilling is progressing nicely in most of the wells under way in the new field at Santa Fe Springs. Indications now are that the Standard will be the next producer of oil there. It has three wells drilling below 3000 feet. The Union's Bell well continued to flow 4000 barrels a day, without let or hindrance.

General Petroleum May Prospect New Territory

Los Angeles, Jan. 14.—Two miles south of Porterville, in Tulare County, General Petroleum Corporation has secured leases approximating 1000 acres, in territory contiguous to a showing of oil that was recently obtained in a test on the Gillette holdings at a depth of 700 feet. The whole district is regarded favorably from the standpoint of geology, surface indication being similar to those of the Kern River field.

Los Angeles, Jan. 14.—E. H. Potts, one of the Coalinga oil workers indicted by the Fresno County grand jury on a charge of kidnapping, assault and burglary in connection with the recent strifle of oil field workers in that district, is reported to have made a confession involving himself and seven other defendants. An affidavit has been filed by defendant attorneys asking separate trials. According to the present schedule the trial will begin January 19.

The indictments grew out of alleged violations of law by the striking oil field workers during the seven weeks of strike beginning on September 11.

St. Louis, Mo., Jan. 18.—Tulsa office of William S. Barnickel and Company is located at 408 World building with F. C. Reyburn in charge. The company handles the distribution of Tret-O-Lite, a patented process for recovering pipe line oil from cut oil.

Lone Star Gas Company Buys Gasser South of Corsicana

Corsicana, Texas, Jan. 16.—Edwin York, drilling contractor, has just completed shallow well number two on the Walton lease northeast of Corsicana, around 1000 feet and has 600 feet of oil standing in the hole. It will be put on the pump at once. Well No. 3 on this same lease is down several hundred feet.

After a test by officials of the Lone Star Gas Company, of the West gasser near Richland, south of Corsicana, the out-put of this well has been purchased. The well tested 1100 pounds rock pressure and it will be piped to the main line of the Lone Star Gas Company who are supplying Corsicana and a string of North Texas cities with natural gas.

There are several tests in Navarro county that are nearing the interesting depth and the next few days should see some completions.

The Cheneyboro well, The Cor-Tex well just south of the city limits drilling around 400 feet. The Morris Frazier well drilling near Pisgah Ridge. The Magnolia Finch near Currie, the deep test of the Corsicana Deep Well Company near Powell and several others in various parts of Navarro county.

On the Fortson farm near Rice in the northern part of the county a twenty five foot shallow sand has been found and arrangements are being made to sink several deep tests in this vicinity.

The sale of acreage in Navarro county has been brisk the past few days some of the larger companies adding to their holdings, especially the Sun Company, The Texas Company and the Humphries interests who have added 1,000 acres to their holdings in the vicinity of Currie. There are at least fifty deep tests under way in Navarro county at present with many derricks up on new locations and many other tests to be drilled in the early spring. Every indication points to the fact that if deep oil, outside of the Currie district, is in Navarro county that the fact will be definitely known in the next six months.

Los Angeles, Jan. 14.—Oil field operations reported to R. E. Collom, Oil and Gas Supervisor, for the week ending January 7, show 17 new wells started, 19 tests for water shut off, 11 deepening or redrilling jobs and 4 abandonments. All but four of the new wells started were in the fields of the southern part of the State.

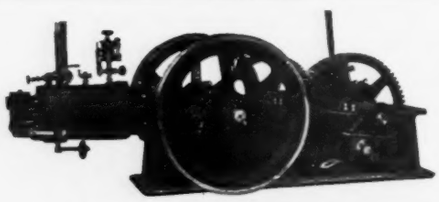
Houston, Texas, Jan. 16.—Thos. W. Blake, for many years sales manager for the South Texas Lumber Company and well known to the oil trade, has organized the Thos. W. Blake Lumber Company, capitalized at $50,000, and will wholesale all kinds of lumber with offices in the Carter Building at Houston. Mr. Blake expects to specialize in lumber for oil field requirements.

Tulsa, Okla., Jan. 16.—It has been announced here that the Brand Petroleum Export Corporation has been organized to deal in all petroleum products. The general offices of the company will be in the Cunard building, 25 Broadway, New York. James H. Brand and Fred P. Prand are the incorporators.

James H. Brand formerly was connected with the Export Oil Corporation in Tulsa.

Louisville, Ky., Jan. 16.—Salesmen for the Gulf Refining Company met two days last week at the Tyler Hotel, in Louisville, Ky., for their sixth annual sessions. H. B. Graham, Pittsburgh, chief lubrication engineer, made the principal address, and other speakers were Charles C. Prinz, manager; R. R. Johnston, assistant manager, and S. B. (Dad) Woolley. After a banquet for fifty-seven Thursday night the salesmen atended a theatre party.

The Reliable Pumping Power



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KENTUCKY COMPLETIONS

Warren County

E. M. Treat and associates' No. 1, Edward Bass (colored) lease, north of Bowling Green, on the Richardsville pike, 1035 feet, 100 barrels.

Allen County

No. 1 on the Hartson lease, Mt. Aerial section, 400 feet, 10 barrels.

Argonne Oil Company's No. 8, W. L. Sibert lease, 400 feet deep, no capacity estimated.

Johnson County

Wiedemann Oil Company's No. 8, Serilda Wright, Martha, Johnson County, 15 barrels.

Lee County

Russell & Whitt's No. 3, Frank B. Russell lease, Fixer, 5 barrels.

Estill County

Wood Oil Company's No. 10, Clay Alexander lease, Ravenna, 1 barrel.

Ray Bigles and others' No. 1, Claude Newkirk lease, 5 barrels.

Developing New Pool in Corner of Floyd County, Kentucky

LOUISVILLE, KY., Jan. 16.—A new pool is being developed in a corner of Floyd County, as indicated by a new strike, near Hueyville, which was made the past week by A. B. Drode & Son on the Turner heirs' lease. This is the initial well on this property, and according to reports it came in with an initial production of from six to ten barrels.

The Haden Williams section of Johnson County, south of Red Bush, is attracting a great deal of attention. Many rigs are drilling, and new locations being made nearly every day. Dr. Wiley Wheeler, of Ashland, and his associates are moving a rig on the Sanford Williams tract. James Crossford recently completed for the Huffman interests well No. 2 on the Polk Pendleton farm near Elza postoffice, and a great many other good completions have been reported. The Huffman well No. 2 was put on the pump, and although the pump was run steadily for three days, they failed to pump the well dry. More than fifty barrels of oil were pumped in the tank the first two days from this well.

Arrangements have been completed for marketing oil from the Berea field in Eastern Kentucky. The oil is being pumped through the line, and the wells as to be pumped continually each day so the Berea field is coming into its own. With a market provided for the steady shipment of oil going forward, it is felt there is nothing to hinder a great deal of development work being done. Most of the companies are preparing for an active campaign as soon as weather conditions permit.

M. T. Kirk is to be at Paintsville this week to start work on his refinery. The Berea pipe line is to be extended into the Weir field, and with a refinery at Paintsville, and taking into consideration the other favorable conditions, oil men in that section look forward to the most favorable year ever had in Johnson County.

Preparations are being made for the entertainment of at least 300 members of the oil fraternity and their friends at the annual banquet to be given by the Kentucky Oil Men's Association at Lexington this month. The list of speakers will include Walker Mayfield, D. D., of Bowling Green, representing the Western Kentucky oil operators; Colonel James W. Turner, of Paintsville, president of the Eastern Kentucky Oil Men's Association; Judge John M. Stevenson, of Winchester, and Judge Clarence C. Sproul, of Irvine, present County Judge of Estill County.

Oil runs from the Eastern and Southern Kentucky fields for the week ending January 7, as reported by the Cumberland Pipe Line Company, total 66,360.30 barrels, as compared with 81,606.30 barrels for the previous week—a falling off of approximately 15,000 barrels, which was probably due to the slump in the price of crude oil at the first of the year, causing a number of producers, who have tankage facilities, to hold their production for more favorable marketing conditions.

Tankers at dock of Gulf Refining Company at Port Arthur

Columbus, Ohio, Jan. 17.—Net income of the Pure Oil Company, as shown by consolidated income account, for eight months ended November 30, 1921, amounted to $3,662,344 after deduction of interest, Federal taxes an depreciation.

Washington, D. C., Jan. 16.—Schedules proposing a reduction to 14 cents per hundred of the present proportional carload rate of 19 cents per hundred on petroleum and petroleum products from Shreveport territory to Louisiana and Mississippi river points have been suspended until May 11 on order of the Interstate commerce commission.

The proposed reduction would have applied from Shreveport and group points to Natchez, Mississippi, via Louisiana and Arkansas Railway; to Vicksburg, Mississippi, via Vicksburg, Shreveport and Pacific and to Baton Rouge, La., via the Louisiana Railway and Navigation Company.

OKLAHOMA PRODUCTION.

Tulsa, Okla., Jan. 18.—The average daily production of the Oklahoma fields for the past week was about as follows:

	Barrels
Burbank	33,450
Other Osage	31,000
Hewitt	34,500
Cushing	25,500
North Okmulgee	24,100
Healdton	21,500
Duncan	18,350
Other fields	122,850
Total	311,250
Last week	311,850

OKLAHOMA RIGS AND LOCATIONS

Tulsa, Okla., Jan. 18.—New rigs and locations during the past week were distributed among the Oklahoma fields as follows:

	THIS WEEK		LAST WEEK	
County—	Rigs	Loc.	Rigs	Loc.
Osage	18	10	18	18
Noble	1	—	3	1
Kay	—	1	—	—
Okmulgee	11	5	20	—
Okfuskee	20	10	10	—
McIntosh	—	—	1	—
Hughes	1	1	1	1
Seminola	1	—	—	—
Creek	9	—	18	9
Garfield	—	—	1	—
Payne	—	—	2	—
Tulsa	—	—	4	1
Garvin	2	—	5	2
Caddo	1	1	1	—
Custer	—	—	—	—
Canadian	1	—	—	—
Carter	3	3	—	—
Murray	—	—	1	—
Stephens	9	2	5	1
Totals	79	34	91	34

OKMULGEE SECTION OPERATIONS

Okmulgee County

Best Prod. & Ref. Co.'s No. 1 Compton, NE 13-15-11, 50 bbl showing 2165 ft.

Becker et al's No. 1 Beaver, NW 6-14-15, 5,000,000 cu ft of gas 2672 ft.

Eastern Oil Co.'s No. 2 Nash, NW 1-15-11, 25 bbls after 80 qt shot 1820 ft.

R. C. McCulloch et al's No. 2 Schulter, NW 17-12-13, 8,000,000 cu ft of gas 1508 ft.

Oklahoma Central Oil Co.'s No. 7 Hill, SW 22-15-11, small showing of oil 2820 ft.

W. B. Pine's No. 3 Johnson, NW 22-15-11, 35 bbls after 40 qt shot 2875 ft.

Ritchie et al's No. 4 Morris, NE 18-13-14, 12,000,000 cu ft of gas 2566 ft.

Sauter et al's No. 2 Corbray, 22-14-14, showing 200 bbls of oil and water 1795 ft.

Sheridan Oil Co.'s No. 1 Snider, NE 19-15-12, hole full of water and abn 2765 ft.

Turman Oil Co.'s No. 29 Golden, SW 35-15-11, 25 bbls after 60 qt shot 2742 ft.

Okfuskee County

Atlantic Oil Prod. Co.'s No. 1 Porter, SE 8-13-9, abn 3399 ft; 6 Jefferson, 16-11-11, 2,000,000 cu ft of gas 2600 ft; 1 Barnett, 34-11-11, 11,000,000 cu ft of gas, will mud off 3005 ft.

Gypsy Oil Co.'s No. 2 Field, 24-11-11, 100 bbls an hour 2733 ft; 1 Jefferson, 13-11-11, showing 30 bbls an hour 2590 ft.

Independent Oil & Gas Co.'s Nos. 2 Field, 24-11-11, 800 ft of oil in the hole 2525 ft; 2 Holmes, 13-11-11, 6,000,000 cu ft of gas and dr 2453 ft; 4 Holmes, SE 13-11-11, 100 bbls an hour 2710 ft.

Lyons Pet. Co.'s No. 5 Barnett, 25-11-11, 145 bbl showing 2374 ft.

Lewis & Barton's No. 1 Looney, 13-12-11, 70 bbl showing 2455 ft.

W. B. Mosew's No. 1 Simmons, NW 7-12-11, abn 2650 ft.

Waite Phillips et al's No. 2 Barnett, 36-11-11, 150 bbl showing 2356 ft; 3 Barnett, 36-11-11, 6,000,000 cu ft of gas and reaming 2341 ft.

Simplex Oil Co.'s No 2 Rentie, 24-12-11, showing of oil 2704 ft.

Tobias et al's No. 3, 15-10-11, 15 bbl showing, 2605 ft, dr 2635 ft.

Muskogee County

Jordan et al's No. 1 Birney, NE 25-14-15, abn 2680 ft.

F. A. Havel's No. 1 James, SW 25-14-20, abn 600 ft.

McIntosh County

Empire Gas & Fuel Co.'s No. 1 Possey, SW 16-10-15, abn 3816 ft.

Hughes County

Prairie Oil & Gas Co.'s No. 1 Brunner, 20-8-10, -,000,-000 cu ft of gas 872 ft, dr 1025 ft.

SOUTH OKLAHOMA OPERATIONS

Carter County

Carter Oil Co.'s No. 8 Muller, NE 16-4s-2w, 100 bbls 1685 ft; 7 Ward, SE 16-4s-2w, 100 bbls 2129 ft; 25 Noble, NE 21-4s-2w, old well deeper, 575 bbls 2280 ft.

Humble Oil & Ref. Co.'s Nos. 4 Vorhees, SE 9-4s-2w, old well deeper, 800 bbls 1658 ft; 2 Gassaway, SE 16-4s-2w, 180 bbls 2222 ft; 3 Davis, NW 35-2s-3w, 18,000,000 cu ft of gas 2702 ft.

Comanche County

W. R. Ramsey's No. 1 Indian, SW 20-1n-9w, showing of gas and setting casing 2530 ft.

Cotton County

J. C. Keys et al's Nos. 2 Smith, SE 22-1s-10w, abn 2010 ft; 8 Kinkade, NW 33-1s-10w, 8 bbls 2157 ft; 3 Lawler, NE 33-1s-10w, 8 bbls 2155 ft; 15 Bills, SW 33-1s-10w, abn 2125 ft.

Magnolia Pet. Co.'s No. 1 Clement, NE 5-2s-12w, abn 2445 ft.

Stephens County

Adams et al's No. 6 Steefel, NW 35-1s-5w, 18 bbls 720 ft.

Coline Oil Co.'s No. 1-B Speer, SW 32-1n-8w, abn 2230 ft.

Magnolia Pet. Co.'s No. 8 Bell, SW 36-1s-5w, 8 bbls 600 ft; 1 Edward SW 20-1s-8w, 800 ft of oil in the hole 2235 ft.

Mudge Oil Co.'s No. 8 Wood, NW 26-1s-5w, 10 bbls

Wildcats Promise to Open Some New Territory in Oklahoma

TULSA, OKLA., Jan. 18.—With a number of wildcats giving promise of opening new producing territories the attention of Oklahoma operators was temporarily diverted this week from the big developments of the proven section to outside operations.

The Burbank, Bristow and Southern Okfuskee County fields were not without interest, however, and a number of good producers were completed in these fields.

New work in the state showed a small decrease over the previous week with the older sections failing to show any great amount of activity.

Production in Oklahoma was steady with a small increase coming from some of the newer fields while the daily average output in Kansas registered another loss. Extension wells and outside tests were in prominence in both the northern and southern districts of Oklahoma during the current week.

Southeast of the Hewitt field in Carter County the wildcat test of the Amerada Petroleum Corporation on the Sam Baptiste in the southwest quarter of 2-5, southeast, found a sand at 1312 feet late last week and showed for a producer. On Tuesday of this week the bailer was lowered and the well made several small flows. With a strong gas pressure evidenced, the company has shut down the test until tankage can be erected and pipe line connections made. The Sinclair Pipe Line Company has started work on a 3-inch line to the new operation from their line in section 7-5 S-1 W. The test is located on the Crinerville Anticline located by Sydney Powers, which is on the west side of and parallel to the Criner Hills and is four miles in length. The oil in the new well tested 35 gravity and is very similar to that coming from the Hewitt field.

In the western Osage, the Atlantic Oil Producing Company's test in the southwest of 13-26-4 after a double shot of 200 quarts at 3495 feet and 270 quarts at 3290 feet, made two small flows and is standing 800 feet of oil in the hole. The well had 35 feet of black lime above the sand and it is the consensus of opinion that the oil is coming from this formation. The oil tested 47 gravity and is the lightest product yet found in Oklahoma. The well is preparing to shoot with 100 quarts again at the 3150-foot level. This operation is in wildcat territory with the nearest production being that of the Burbank pool in the northeast part of township 26-5.

West of Bristow in Creek County, the Wilcox Oil and Gas Company has the banner well of the week in No. 1 Harjo in southwest 35-6-8. At 3076 feet a 20,000,000 cubic feet gas flow was encountered and after drilling to 3091 feet the well began making a spray of oil which later increased and at present is making 2,200 barrels a day. Production is coming from the Dutcher sand in which Wilcox completed a number of large wells in the southeast quarter of the same section. These wells ran into water after a short time and are only making a small amount of oil at present. The big well is located on the Creek County poor farm which adds to that already extensive list of producing poor farms, church lots, school lands and cemeteries.

The Prairie Oil and Gas Company's test in section 23-16-8 got the top of the sand at 2960 feet and had a good showing of gas early in the week. The well is one mile in advance of the Continental production to the north and east. In the Continental pool the Bradstreet and Lewis well on the Brady farm in 34-16-9 is making 950 barrels this week at 2914 feet. The well was drilled in last week and extended the field to the south. In this section the Transcontinental Oil Company's No. 1 failed to make a producer in the Deutcher sand and will go on down to the Wilcox.

The Gypsy Oil Company's initial well in the northwest of 32-27-6, Burbank field, was shot Sunday with 100 quarts and respended with 840 barrels the first 15 hours. The Producers & Refiners Corporation's No. 2 in northeast 16-26-6 is making 500 barrels after a 140-quart shot at 2920 feet.

The new Okfuskee pools came to the front again this week with three wells completed during the past seven days, showing 100 barrels an hour each. The Gypsy Oil Company's No. 1 Jefferson in the southwest of 13-11-11, Quinn extension, is making between 1700 and 1900 barrels a day this week after having started off with an initial of 100 barrels an hour late last week. The Independent Oil & Gas Company's second well in 13-11-11 reported with 800 feet of oil in the hole, drilled a little deeper into the sand at 2723 feet and gauged 100 barrels an hour.

In Butler County, Kansas, the Kansas and Gulf Company's No. 3 Brown in 36-29-5 drilled into the sand at 2648 feet and is making 200 barrels a day. Other Kansas fields were quiet during the week.

KANSAS PRODUCTION.

Independence, Kans., Jan. 18.—The average daily production of the Kansas fields for the past week was about as follows:

	Barrels
El Dorado	23,500
Covert and Llorence	18,250
Peabody and Elbing	12,700
Augusta	11,000
Other fields	22,400
Totals	87,850
Last week	88,050

755 ft; 12, NW 1-2s-5w, 9 bbls 702 ft; 13, NW 1-2s-5w, 10 bbls 700 ft.

Davo Malernee's No. 2 Peters, SW 20-1s-8w, 16,000,000 cu ft of gas 1848 fe.

North American Oil & Ref. Co.'s No. 1 School Land, SW 22-1s-8w, abn 2235 ft.

National Exploration Co.'s No. 1 Speer, NW 32-1n-8w, abn 2330 ft.

Pittsburg Oil Co.'s No. 1 Cobb, SE 6-2s-4w, 5 bbls 782 ft; 2 Cobb, SE 6-2s-4w, 8 bbls 468 ft.

Roxana Pet. Corp.'s No. 2 Clarkson, NW 30-1s-8w, abn 2195 ft; 1 SW 30-1n-8w, abn 2108 ft; 2 Cook, SW 30-1n-8w, abn 2219 ft.

Shaffer & Mankin's No. 2 Young, SW 29-1n-8w, 150 bbls 2256 ft.

J. K. Sullivan's No. 3 Nelson, NE 28-1s-3w, 9,0000,00 cu ft of gas and spray of oil 2167 ft.

Winkler & Champlin's No. 5 Little, SW 20-1s-8w, 150 bbls 2290 ft.

Westheimer et al's No. 2 Pope, NE 29-1s-8w, 75 bbls 2218 ft.

KANSAS OPERATIONS

Butler County

Hoyt et al.'s No. 1 Bellner, NE 19-27-6, shot 20 qts and trying to shut off water.

Canadian-Kansas Oil Co.'s No. 1 Barnhill, NE 12-27-7, 15 bbls, 2274 ft.

Shawyer & Sutton et al.'s No. 2 Craig, SE 23-28-5, 100 bbls after dr 2730 ft.

Derby Oil Co.'s No. 1 Brooks, NW 24-28-5, 50 bbls and waiting on shot, 2839 ft.

J. & C. Oil Co.'s No. 3 Molter, NE 26-28-5, shot 220 qts and abn 2902 ft.

Greenwood County

St. Louis Oil Refg. Co.'s No. 3 Kruebler, NE 15-23-13, 30 bbls, 1834 ft.

Lyon County

Brimm et al.'s No. 1 Lewis, SE 8-20-12, abn 2104 ft.

Minnehoma Oil Co.'s No. 1 Collan, SE 30-21-12, abn 2525 ft.

KANSAS RIGS AND LOCATIONS

El Dorado, Kans., Jan. 18.—New rigs and locations for the past week in the Kansas field were distributed about as follows:

	THIS WEEK		LAST WEEK	
County—	Rigs	Loc.	Rigs	Loc.
Butler	12	8	10	4
Greenwood	2	4	5	1
Lyon	1	—	—	—
Woodson	—	—	2	1
Miscellaneous	13	6	10	6
Totals	28	18	27	12

NORTH OKLAHOMA OPERATIONS.

Osage County.

Bertram Brothers No. 1, NE 17-22-9, 20 bbls after 60 qt shot 2215 ft.

Barnsdall Oil Corp.'s No. 17, NW 20-29-9, 100 bbls fater 150 qt shot 1597 ft.

Continental Oil Co.'s No. 1, NE corner 27-24-9, 135 bbls after 150 qt shot 2141 ft.

Carter Oil Company's No. 10, SE 5-26-6, 550 bbls after 110 qt shot 2930 ft; No. 11 SE 5-26-6, 320 bbls after 120 qt shot 2900 ft; 7 NE 9-26-6, 260 bbls after 70 qt shot 2760 ft; 5 NW 9-26-6, 563 bbls after 25 qt shot 2790 ft.

Cosden Oil & Gas Co.'s No. 3, NE 6-26-6, 300 bbls after 110 qt shot 2949 ft.

Deep Pool Oil Co.'s No. 10, NW 30-21-12, 30 bbls natural 1649 ft.

Dunn Petroleum Co.'s No. 1, NE 18-22-9, hole full of water and abn 2735 ft.

Douglas Oil Co.'s No. 11, NW 33-24-8, 20 bbls after 20 qt shot 729 ft.

Devonian Oil Co.'s No. 5, SW 5-26-6, 250 bbls natural 2841 ft.

Flesher & Jennings' No. 7, SW 1-21-11, 45 bbls natural 1800 ft.

Finance Oil Co.'s No. 3, SW 17-22-11, 2,500,000 cubic ft of gas.

59 Osage Oil Co.'s No. 30, NW 7-24-12, abn 1680 ft.

Louie Friedman's No. 1, SE 6-26-6, 551 bbls after 170 qt shot 2907 ft.

Gilliland Oil Co.'s Nos. 10, SE 26-23-7, 10 bbls natural 2799 ft; 20, SE 26-23-7, 35 bbls after 50 qt shot 2830 ft.

Cypev Oil Co.'s Nos. 6, NW 5-26-6, 600 bbls after 110 qt shot, water has broke through casing 2945 ft; 1, NW corner, 32-27-6, 840 bbls after 100 qt shot 2950 ft.

Ohiokla Oil Co.'s No. 1, SW 24-26-10, abn 2840 ft.

Peters & Markham's No. 2, SW 4-23-9, 24,000,000 cubic ft of gas 2147 ft; 3, SW 4-23-9, 5,000,000 cubic ft of gas with 5 bbls of oil 2155 ft; 15, 13-23-8, 4 bbls natural 1138 ft.

Phillips & Gypsy's No. 8, SW 24-25-9, 150 bbls after 10 qt shot 2060 ft.

Phillips & Skelly's No. 2, SE 25-27-5, 500 bbls natural 2898 ft.

Plymouth Pt. Co.'s No. 12, NE 26-25-11, 15 bbls after 100 qt shot 1676 ft.

Roxana Pet. Corp.'s No. 9, SE 36-27-5, 5,500,00 cubic ft of gas 2887 ft.

This is a practical valve, invented by a practical oil field man. It is thoroughly covered by patents and is manufactured in our own plant.

No Loose "Leathers," Fewer Pulling Jobs

Our standing valve which is screw threaded into the bottom of an ordinary working barrel, eliminates leathers getting loose, and following your traveling valve. It will last as long as the ball and set will last.

It saves tubing jobs, time in replacing leathers, and consequent expense and loss of production while well is off

Sold through Oilwell Supply, Wilson Supply, Continental Supply, Girten Belting and Supply Company and Petroleum Supply Company, Superior Iron Works, Peden Iron and Steel Company, also direct to the trade.

WRITE FOR FULL INFORMATION

SOUR LAKE MACHINE & SUPPLY COMPANY

SOUR LAKE, TEXAS

Torrens System of Land Titles Explained; Gives More Security

By Franklin P. Davis

IT is title from the State rather than the individual, guaranteed by the state rather than individual warranty. It makes possession without question or quibble the title in the holder.

It dispenses with all research beyond the present owner, once the title is established, all liens and encumbrances being shown on the face of the record. Litigation is practically eliminated. By this system fraud is practically impossible. It provides justice to anyone defrauded of their rights through the error of the examiners. It makes possible transfers or loans a matter of hours.

It eliminates tax titles and gives a sense of security never before realized. It makes real estate a sufficient quick asset for banks to lend money on. It abolishes endless fees and gives real estate a higher value.

In other words it is constitutional, safe, practical, simple, economical, easily operated, and should be the universal method of conveying land.

It is in use by three-fourths of the civilized world and has never been abolished in any place once tried.

It was begun in Australia 60 years ago and soon spread to all the British Colonies and has been adopted by much of Europe. It is more or less the law of some 20 states of the Union and for many years there has been an effort to get it nationally and uniform. Nearly every state has some modification of its general principles. This due to the opposition of title guaranty companies, abstractors and lawyers of selfish interest.

In 1893 the World's Real Estate Congress carried, with only two dissenting votes, the resolution; "That it is the sense of the delegates of the World's Real Estate Congress that they should do what lies in their power to call the attention of their various state legislatures to the benefits of the Torrens System and recommend its adoption, so modified as to suit it to their State Constitutions and laws."

And in the same year the American Bar Association said: "The trend of events unmistakably shows that there is an increasing need and demand for the demand of its (Torrens System) functions in a practical, definite and fruitful manner." At the same time they asked that the better class of lawyers stop their unintelligent criticisms of the system.

In Australia after near a million and a half of registrations, but one loss was evolved from incorrect title registrations. From the Massachusetts Assurance Fund of $248,857 but $1,200 was paid and but one other effort made, which was denied.

In the words of Lord Chief Justice Coleridge of Great Britain, "The man who denies the practicability of applying it might as well deny that two and two make four."

Tulsa, Okla., Jan. 14.—E. J. Freeman, vice president and for the past two years manager of the Tulsa offices of the Acme Petroleum Corporation, will return about January 15 to the company's general headquarters in Chicago. At the home office Mr. Freeman will take a pare in the executive supervision of the company.

A. T. (Jack) Smith will be in charge of the Tulsa offices upon Mr. Freeman's departure.

A. T. (Jack) SMITH

Mr. Smith before becoming connected with the Acme about six months ago, was associated with the Sinclair Refining Company and the Texas Company in the lubricating and station departments. He has had broad experience in the marketing branch of the industry and is well known throughout the country.

Simons & Moore's No. 2, NE 5-26-6, 450 bbls 2982 ft.

Sinclair Oil & Gas Co.'s Nos. 7, NE 1-26-5, 160 bbls after shot 2889 ft; 9, NE 1-26-5, 150 bbls after 110 qt shot 2813 ft.

Tidal Osage Oil Co.'s Nos. 5, NE 4-26-6, 370 bbls after 150 qt shot, 2862 ft; 6, SE 4-26-6, 300 bbls natural; 2, SW corner 30-27-6, 1055 bbls after 150 qt shot 3000 ft.

Winona Oil Co.'s No. 1, NW corner 1-23-8, abn 523 ft; 2, NW 15-28-10, 20 bbls natural 1795 ft.

Wah-Sha-She Oil Co.'s No. 1, NE 14-28-11, abn 1545 ft.

Osage County Near Completions

Atlantic Oil Prod. Co.'s No. 1, SW 13-26-4, two small flows from black lime after shot at 3290 ft. Will shoot with 110 qts at 3150 ft.

Donohue et al's No. 2, SW 20-22-10, shot 80 qts and have a small showing of oil 1874 ft.

Gypsy Oil Co.'s No. 5, 31-27-6, one small flow 2920 ft; 1, NW 25-27-7, 100 ft of oil in the hole and setting casing 2700 ft; 5, NW 5-26-6, 2600 ft of oil in the hole 2942 ft.

Munn Brothers' Nos. 1, SW 36-22-8, mudding off 12,000,000 cubic feet of gas 1635 ft; 1, NE 28-20-12, mudding off gas 1500 ft.

Producers & Refrs Corp.'s No. 2, NE 16-26-6, 200 ft of oil in the hole and waiting on shot 2920 ft.

Sinclair Oil & Gas Co.'s No. 6, SW 36-27-5, hole full of oil 2929 ft.

Kay County.

Blackwell Oil & Gas Co.'s No. 1 Spoon, SW 9-28-1e, showing of oil 2205 ft.

Noble County.

White Eagle Oil & Refg. Co.'s No. 1 Novoty, SE 10-24-1w, 35,000,000 cubic ft of gas 1935 ft; 2 Novoty, SW 10-24-1w, show of gas 380 ft.

Southwest Pet. Co.'s No. 4 Murray, SW 10-24-1w, 8,000,000 cubic ft of gas and mudding off.

Comar Oil Co.'s No. 5, SEe NW 15-24-1w, 10,000,000 cubic ft of gas to bradenhead 1848 feet.

OLD FIELDS OPERATIONS

Creek County

Bradstreet Oil & Gas Co.'s No. 1 Brady, NW corner 34-16-9, 950 bbls 2914 ft.

Central National Oil Co.'s No. 1 Groom, SE 21-15-10, hole full of water and abn 3267 ft.

Gypsy Oil Co.'s No. 4 Clinton, NW 22-15-10, 1550 bbls after 120 qt shot 2636 ft.

Pulaski Oil Corp.'s No. 6 Sewell, NW 16-15-10, 200 bbls after 140 qt shot 2698 ft.

Phillips Pet. Co.'s No. 4 Long, NE 21-15-10, hole full of water and abn 2710 ft.

Selby Oil & Gas Co.'s No. 7 Robbins, NW 10-15-10, 30 bbls after 70 qt shot 2649 ft; 9 Sewell, NE 10-15-10, 60 bbls after 90 qt shot 2585 ft.

W. C. Woods et al's No. 1 Perryman, SE 29-19-11, 75 bbls after 120 qt shot 2550 ft.

Williams et al's No. 2 Abraham, SE 5-15-10, small showing of oil 2755 ft.

White Oil Corp.'s No. 4 Unalloted, NE 21-15-10, 25 bbls after 30 qt shot 2633 ft.

Garfield County

Sinclair Oil & Gas Co.'s No. 4 Crews, NW 30-22-3w, 100 bbls 1945 ft; 4 Morrison, NW 31-22-3w, 90 bbls 2140 ft.

Blasdell Method of Continuous Distillation Is Successful One

THE BLASDELL method of continuous distillation, which the Mutual Oil Company is using to good advantage in its refinery at Glenrock, Wyoming, is proving quite successful. Its inventor, E. C. Blasdell, describes the system, at our request, as follows:

"The Blasdell stills are built in sizes of six and eight feet diameter and 40 feet long, same have a tower of 5 feet diameter and 20 feet high. This tower is connected to the still by a 24 in. neck.

"This is a combination still and can be used for running crude oil and also for steam stilling purposes.

"The stills are fitted with two vapor lines and the auxilliary mechanical construction is such that it allows you to take off four different grades overhead simultaneous and continuous in addition to the base.

"These stills are operated continuous just the same as a steam boiler. The pump feeds the still continuous and the finished product comes from still continuous.

"The six foot diameter still has a capacity of 1500 barrels crude every 24 hours and the 8 foot diameter still a capacity of 2,000 barrels every 24 hours. These stills have run for a perio of two months without having to be shut down for cleaning.

"These stills have proven their economy of operation and the up-keep is almost nothing

"These stills are in use at five different refineries and have proven their worth along the lines of saftety, economy of operation and quality of product of distillation."

MISCELLANEOUS PRODUCTION

The smaller fields of North Texas showed the following daily average for the past week:

	Barrels
Kemp-Munger-Allen	2,235
Holliday-Archer County	1,590
Iowa Park	660
Petrolia	260
Total	4,745
Last week	5,050

BURKBURNETT PRODUCTION

Wichita Falls, Texas, Jan. 17.—Production in the Burkburnett field showed the following daily average for the past week:

	Barrels
Magnolia Petroleum Company	2,895
Kansas & Gulf Company	2,750
The Texas Company	2,275
Gulf Production Company	1,680
Humble Oil & Refining Company	1,500
Panhandle Refining Company	1,000
Texhoma Oil & Refining Company	675
Livingston Oil Corporation	675
White Oil Corporation	100
Miscellaneous	23,550
Total	37,100
Last week	39,145

ELECTRA PRODUCTION

Wichita Falls, Texas, Jan. 17.—Production in the Electra field showed the following daily average during the past week:

	Barrels
The Texas Company	3,800
Magnolia Petroleum Company	3,630
Griswold Oil Company	1,200
Hobbs et al	880
Planet Petroleum Company	785
Gulf Production Company	675
Panhandle Refining Company	100
Miscellaneous	615
Total	11,685
Last week	11,715

YOUNG COUNTY PRODUCTION

Fort Worth Texas, Jan. 17.—The average daily production for Young County during the past week was distributed as follows:

	Barrels
North American Oil & Ref. Co.	1,100
Panhandle Refining Company	880
Simms Oil Company	750
Oklahoma Petroleum & Gasoline Co.	500
Eureka Producing Company	430
Emerick Oil Company	225
Gulf Production Company	125
The Texas Company	15
Miscellaneous	6,125
Total	10,250
Last week	10,500

DESDEMONA DRILLING REPORT

Camel Oil Co.'s No. 1 Sides, fsh tools 2985 ft. Central Oil & Dev. Co.'s No. 1 Abernathy, sd 3005 ft.

Harrison et al's No. 1 Tidwell, sd 150 ft.

Jerome McLester's No. 1 Goodman, dr 2625 ft.

Leon Valley Oil Co.'s No. 1 Haynes, water trouble 3260 ft.

Patton & Cassidy's No. 3 Anderson, sd in sandy lime formation for shot 2840 ft.

Revere Oil Co.'s No. 4 Little, fsh cas 2910 ft. Ringles et al's No. 1 Sam Davis, sd 3455 ft.

Spear Oil Co.'s No. 2 Blankenship, showing oil after second shot 3095 ft.

Texas Eagle Oil Co.'s Nos. 7 and 8 Anderson, rigs.

New Deep Pool in Wichita County East of Electra Makes Scouts Jump

WICHITA FALLS, TEXAS, Jan. 17.—Eclipsing any new development that has taken place in Wichita County during the past two years, the showing made by the Magnolia Petroleum Company's No. 1 J. C. Duke, located one-half mile northeast of Fowlkes Station and east of the Electra field, has brought to light a new deep pool of oil. Leasing activity got underway within a few hours after the well began flowing, and early this week offset acreage was still turning at prices ranging from $500 to $1,000 per acre. In addition to the discovery of the new pool, the Electra field scored one 500-barrel producer and a number of extra large pumping wells, and the Southeast Burkburnett field contributed one 275-barrel well and two 100-barrel pumpers, making the past seven days period one of the most eventful for Wichita County operators in many months.

The Magnolia Petroleum Company's No. 1 Duke is located in the northwest corner of block 3, section 20, I. & G. N. railway survey, abstract 410, and began flowing after drilling three feet in the oil sand encountered at 1591 feet. The well actually flowed better than 300 barrels per day for several days with 18 feet of open hole, then settled to about 200 barrels by heads account of cavings. Early this week a liner was lowered nearly to the bottom and the hole drilled one foot deeper resulting in the production picking up a little. The Magnolia Petroleum Company has announced that the well will be completed at the present total depth of 1595 feet, and placed on the pump when the gas pressure recedes. The oil tested 40.4 gravity. The hole was drilled with a star machine, and the well began flowing just as an attempt was being made to run the bailer.

This well is only about 3,000 feet northeast of a small pool producing from an 850-foot level and above. About two miles to the east of the Duke well, the Humble Company drilled a dry hole at 2000 feet with a rotary outfit on the Burnett ranch in Section 5, and about one and one-half miles southwest is located another deep abandoned hole. Acreage offsetting the Duke well to the north, east and west commanded the best prices. The elevation is noticeably higher in these three directions from the well. It is estimated that fully 3000 acres in leases have changed hands during the past five days on the strength of the discovery of the new producing horizon for that section of the county. The log of the well reports a good oil sand from 645 to 650 feet, and another pay streak at 866 feet for a thickness of 12 feet. Neither of these two sands were tested out.

The major companies were among the first to buy leases on offset acreage, and continued to buy early this week in spite of the fact that prices were soaring far beyond expectations. Many of the lessees are obligated to start drilling within 30 and 60 days, which insures rapid development of the pool. Practically a water famine exists in this immediate section of the county, and several of the major companies have announced that water lines will be run to the field for a distance of more than six miles, but will be unable to supply boiler water to other operators because of having such a limited supply of water available. A number of locations have already been made, and derrick timbers and drilling equipment are being moved in, but it is felt certain that drilling will be held in check until a good rain occurs.

In the South Electra pool in Section 6 of S. B. Burnett survey No. 6, the Griswold Oil Company's No. 14 Burnett is being completed early this week and swabbing and flowing approximately 500 barrels of oil with considerable gas from seven feet of oil sand picked up at 1830 feet. It is planned to swab the well for several days and then place on the pump after the gas pressure dies out. In the same territory, the Bryan Oil Corporation's No. 6 S. B. Burnett is reported with an initial production of about 300 barrels at 1640 feet. The Planet Petroleum Company's No. 30 Burnett is making 200 barrels at 1820 feet, and the Wichita Petroleum Company's No. 30 S. B. Burnett is pumping 150 barrels at 1822 feet. On the Waggoner ranch, located also in the South Electra pool, Bridwell & Heydrick's No. 8 well is doing 250 barrels on the pump at 1645 feet.

In the Southeast Burkburnett field, Laning and Moninger's No. 8 A. F. Dodson is reported pumping about 100 barrels at 1030 feet, and on the same tract Staley and associates' No. 5 well is good for 150 barrels on the pump at 1035 feet.

Late Tuesday evening the Lewis Oil Corporation-Camp Oil & Gas Company's No. 9 A. F. Dodson was reported flowing and swabbing about 275 barrels of oil daily from 16 feet of oil sand found at 1021 feet. When put on the pump this well is expected to hold up about 100 barrels.

The Texhoma Oil & Refining Company's No. 12 S. M. Gose, located on the east side of the Texhoma pool in Northern Archer County, was completed last week, pumping 75 barrels from four and one-half feet of oil sand found at 1606 feet. This company is rigging up to drill two more tests.

BURKBURNETT COMPLETIONS

Staley et al's No. 5 Dodson, 150 bbls 1035 ft.

BURKBURNETT DRILLING REPORT

Boyd et al's No. 1 Canada, rigging up star machine 1640 ft. Bryan Oil Corp.'s No. 7 Taylor, testing 1690 ft.

Camp Oil & Gas Co.'s Nos. 3 Beach, set cas 1530 ft; 9 Dodson, dr 1030 tt.

Franklin Oil Co.'s No. 3 Cropper, set cas 1370 ft.

Hunter et al's No. 8 Dodson, running core barrel 950 ft.

Jetter et al's Nos. 1 Myers, sd 1810 ft; 2 Myers, moving in star machine 1825 ft; 3 Myers, dk.

Kirby et al's No. 5 Taylor, cas trouble 1650 ft.

Langford et al's No. 1 Langford, dr 1164 ft. Lanning et al's No. 8 Dodson, set cas 1025 ft.

Magnolia Pet. Co.'s Nos. 8 Anderson, dr 100 ft; 9 Anderson, dr 1300 ft. Monarch Oil & Ref. Co.'s No. 3 Myers, sd 1360 ft.

Old Colony United Oil Co.'s No. 6 Beach, sd 1225 ft.

Palmer et al's No. 2 Chapman, dr 1620 ft. Patton et al's No. 1 Lease B. Waggoner, dr 250 ft. Penna-Burk Oil Co.'s Nos. 1 C. Birk, sr 1815 ft; 6 Musgrave, dr 1500 ft.

R. W. Ramming's No. 1 Fee, sd 1885 ft.

Seideman Oil Co.'s No. 1 Kinnison, sd 1615 ft. W. G. Skelly's No. 7 Waggoner, sd 1560 ft. Staley et al's No. 6 Dodson, dr 140 ft. Sunshine State Oil & Ref. Co.'s No. 1 D. H. Holtzen, dr 120 ft.

Texhoma & United Savings Co.'s No. 4 Beach, dr 980 ft.

Weona Oil Co.'s No. 2 M., K. & T., sd 1350 ft.

New York, N. Y., Jan. 17.—It is stated on good authority that earnings of Sinclair Consolidated Oil Corporation for 1921 will approximate $2 or more a share, as compared to earnings of 60 cents a share for the first six months of last year. Appreciation of crude market the latter half of the year will enable the company to offset losses during the first six months period.

ELECTRA COMPLETIONS

Bridwell & Heydrick's No. 8 Waggoner, 250 bbls 1645 ft.

Kemp et al's No. 1 Waggoner, dry and abn 1930 ft.

Kimmell et al's No. 1 Kemp & Kemper (K.-M.-A. Dist.) 15 bbls 1766 ft.

Magnolia Pet. Co.'s Nos. 35 Allen, dr deeper, 25 bbls 2000 ft; and 1 J. B. Duke, 250 bbls 1594 ft.

Planet Pet. Co.'s No. 20 Burnett, 200 bbls 1820 ft.

Waggoner Ref. Co.'s No. 3 Waggoner, 10 bbls 855 ft.

Wichita Pet. Co.'s No. 30 Burnett, 150 bbls 1822 ft.

ELECTRA DRILLING REPORT

Babcock et al's No. 2 Woodard, sd 1030 ft. Bryan Oil Corp.'s Nos. 1 Burnett, running core barrel 1825 ft; 3 Burnett, dr deeper 1550 ft; 6 Burnett, testing 1640 ft.

Carter et al's No. 1 Burnett, dr 300 ft. Colo-Electra Oil Co.'s No. 1 Burnett, testing 670 ft.

Economy Oil Co.'s No. 1 Burnett, dr 240 ft.

Fisher et al's No. 1 Fisher, dr 360 ft.

Griswold Oil Co.'s Nos. 15 Burnett, rat holing 1790 ft; 18 Burnett, dr 1250 ft; and 19 Burnett, dr 1150 ft. Griswold et al's No. 1 W. T. Waggoner, dr 1450 ft. Gulf Prod. Co.'s Nos. 6 Collett, dr 1150 ft; 10 Forbes-Burnett, testing 1410 ft; and 1 Parker, cas troubel 1990 ft.

Harris et al's No. 3 Burnett, rigging rotary to dr deeper, td 700 ft. Harvey et al's No. 1 W. T. Waggoner, rigging rotary. Hobbs et al's No. 2 Douglass, testing 1880 ft.

Kentucky Production Co.'s No. 1 W. T. Waggoner, rigging up.

Ladd & Hannon's No. 1 W. T. Waggoner, dr 1315 ft. Lewis Oil Corp.'s No. 1 W. T. Waggoner, sd 100 ft.

Magnolia Pet. Co.'s Nos. 52 H. & T. C., dr 575 ft; and 42 Piper, dr 725 ft.

Nixon Co.'s No. 9 Kemp & Kempner, testing 1490 ft.

Planet Pet. Co.'s Nos. 31 Burnett, dr 800 ft; 33 Burnett, dr 1800 ft; 34 Burnett, dr 1400 ft; and 2 Waggoner, dr deeper 1800 ft. Potlatch Pet. Co.'s Nos. 14 Parker, dr 300 ft; and 15 Parker, lcn.

Rainbow Oil & Gas Co.'s No. 1 Roberts, sd 925 ft. Ryan Pet. Co.'s No. 7 Nance, testing 1715 ft.

Scott Pet. Co.'s No. 1 Ward & Todd, reset cas 1018 ft. Strunk et al's No. 1 Burnett, dr 1800 ft.

The Texas Co.'s No. 212 W. T. Waggoner, dr 900 ft. Texas Superior Oil Co.s' No. 2 Burnett, pulling cas 1530 ft.

Walker Consolidated Oil Co.'s No. 5 Burnett, set cas 1826 ft. Wallace Oil Co.'s No. 1 Bowers, testing 1504 ft. Wichita Pet. Co.'s Nos. 31 Burnett, dr 1825 ft; 32 Burnett, fsh 1110 ft; 33 Burnett, dr 350 ft; and 34 Burnett, rigging up rotary.

Four Fair Completions for Stephens County, Texas

Fort Worth, Texas, Jan. 19. — Stephens County, after scoring an unusual number of fair sized producing wells last week, continued at the same pace early this week with four completions ranging from 100 to 400 barrels initial production. The Fensland Oil Company's No. 4 J. F. Brown, located in the Curry-Aetna pool, is reported good for 400 barrels after shot of 80 quarts from 3190 to 3230 feet. The No. 3 well on this lease was completed last week with an initial flow of 700 barrels from 3217 to 3257 feet. Fensland's No. 2-A C. T. Stoker flowed 160 barrels before given a shot of 120 quarts from 3175 to 3220 feet, and is now good for 330 barrels.

Parker and associates No. 5 C. T. Stoker, also in the Curry-Aetna pool, is flowing 180 barrels natural from eight feet of gray lime formation encountered at 3230 feet. The Breck-Brazos Oil Syndicates' No. 2 Brown is reported making 100 barrels after shot of 80 quarts from 3250 to 3280 feet. In the north half of Stephens County, the Oklahoma Petroleum & Gasoline Company and associates' No. 1 Davis is showing salt water after shot of 80 quarts from 3200 to 3235 feet.

South Bend Workover Is Flowing 800 Barrels

Wichita Falls, Texas, Jan. 17.—Deepening of a 2100-foot producer in the South Bend pool to 2630 feet, thereby resulting in a flush production estimated at 800 barrels, bringing in a 4000-foot flowing well in the Bunger District; and the completion of several good sized wells were among the features of the development going on in the Young County fields during the past seven days.

Conner, Sons and Cloughley's No. 6 E. N. McCluskey, located south of the Panhandle Refining Company's McCluskey tract, in the South Bend pool, has been carried down from the 2100-foot pay, after going to salt water, to 2630 feet where an oil sand was unexpectedly drilled into good for approximately 800 barrels flush production. This well is on the west edge of a 25-acre lease and is the only one producing from the 2600-foot horizon. It is reported showing considerable gas. As result of the showing of this well the Panhandle Refining Company has announced that three new locations have been made on the south end of its lease to begin drilling as soon as possible. Other companies owning nearby acreage with shallower producing wells are expected to begin a deepening campaign. The Conner et al well is only about two miles west of the North American Oil & Refining Corporation's Scott-Smith, which came in last month with an initial flow of more than 2500 barrels at 3525 feet.

In the Bunger district, the Rosell Petroleum Company's No. 1-B A. Grimshaw (C. W. Brooks), located about 1500 feet southwest of the town of Oil City, is reported flowing several hundred barrels at 4055 feet. This well is the deepest test in the district, and picked up a sandy lime pay at 3985 feet for a thickness of 30 feet, then encountered another sandy lime formation from 4050 to 4055 feet. The completion of this well gives the Grimshaw tract four producing horizons—1900 feet; 2600 feet; 3650 feet; and 4,000 feet. Wilkins et al's (Edgar D. Floss) No. 1 Grimshaw is making about 25 barrels of oil and one-quarter million cubic feet of gas after shot of 140 quarts from 3645 to 3670 feet. Union Oil Company's No. 1 Grimshaw failed to strike a productive formation at either 1900-foot or 2600-foot, and is reported failing salt water and drilling below 2740 feet. This well found a sand at 2580 feet for a thickness of 20 feet.

Offsetting the Edgett 500-barrel producer from the 2600-foot pay on the Grimshaw lease, the Rosell Petroleum Company's No. 2-E Grimshaw is making 40 barrels of oil and 8,000,000 cubic feet of gas from 2578 to 2583 feet. The Edgett well found the pay at 2601 to 2609 feet.

The largest completion for the past seven days in the Bunger pool was brought in by the Sun Company on the J. A. Driver tract in the G. E. F. Auburg survey, flowing 400 barrels from five feet of oil sand found at 1875 feet. The same company's No. 3 Driver is a 100-barrel well at 1886 feet. Both of these producers are on the northeast edge of the proven area. A short distance to the west the Simms Oil Company recently completed a 60-barrel pumping well in feet deeper than the Sun Company wells, and is now doing about 10 barrels of oil and some salt water.

Denver, Colo., Jan. 17.—With all but about 4,500 barrels from the Big Muddy field coming from the Salt Creek district in Wyoming, crude acceptances at the Casper refinery of the Midwest now are averaging around 40,000 barrels daily.

YOUNG COUNTY COMPLETIONS

South Bend District

Colquitt et al's No. 1 M. K. Graham, 25 bbls 1858 ft.

Bunger District

Rosell Oil Co.'s No. 2-E Grimshaw, 25 bbls oil and 8,000,000 cu ft gas 2580 ft.

Sun Co.'s Nos. 2 Driver, 400 bbls 1880 ft; 3 Driver, 100 bbls 1885 ft.

YOUNG COUNTY DRILLING REPORT

South Bend District

A. B. & F. Oil Co.s No. 1 State Land, sd 3000 ft.

Bedford et al's Nos. 1 Moore, ur 2050 ft; and 2 Moore, rig. Bevacqua et al's No. 1 Stovall, sd 1400 ft.

Canadian Pacific Oil Co.'s No. 1 McBrayer, set cas 1540 ft. Casey et al's No. 1 Jefferies, dr 3715 ft. Conner et al's No. 2 McCluskey, rigging up.

Dalton et al's No. 1 Alford, dr 400 ft. Dewes & Tuck's No. 1 McCluskey, dr 3210 ft.

Eggers et al's No. 1 J. W. Horner, rig.

Eggers et al's No. 1 J. W. Horner, rig. Elliott et al's No. 1 Swearinger, dr 900 ft. Eureka Production Co.'s No. 5 Scott, dr 100 ft.

Five Hundred Oil Synd.'s No. 1 Farmer, sd 1960 ft.

Godley Oil Co.'s Nos. 17 M. K. Graham, dr 2110 ft; and 18 M. K. Graham, lcn.

Hemptlinger et al's No. 1 McBrayer, sd 1770 ft.

Konowa Oil & Gas Co.'s No. 1 Stovall, dr 3175 ft.

New Domain Oil & Gas Co.'s No. 1 A. Graham, rigging up to pump 3750 ft. North American Ref. Co.'s Nos. 4 Burgess, plugging back, td 2120 ft; 1-B Burgess, rig; 3 Goode, rig; 3-B Scott, dr 1500 ft; and 4-B Scott, lcn.

Old Dominion Oil Co.'s No. 1 Wayne, dr 1075 ft.

Panhandle Ref. Co.'s Nos. 1 Martin, rig; and 1 Scott, dr deeper 3375 ft. Penn Cities Oil Co.'s No. 1 Herron, dr 2050 ft. Pleasant Oil Co.'s No. 1 Reeves, sd, 2082 ft.

Rhodes Drilling Co.'s No. 1 Ferguson, dr 380 ft. Roxana Pet. Co.'s Nos. 3 Ford, sd 2225 ft; 1 McCluskey, dr deeper 3670 ft; and 3 Scott, dr 750 ft.

Seale & Vandervert's No. 1 Stovall, sd 2800 ft. Stephens et al's No. 1 Garvey, sd 750 ft. C. E. Summer's No. 1 Moore, sd 1450 ft. Sun Co.'s No. 1 Davis, dr 3000 ft.

Bunger District

Barnes Prod. Co.'s No. 1 Parson, sd 2500 ft. H. Byren's No. 1 Mahoney, dr 1080 ft.

Cheney et al's Nos. 3 Grimshaw, set cas 1950 ft; and 4 Grimshaw, rig. Cosden Oil & Gas Co.'s No. 1 G. F. Parsons, dr 2984 ft.

Edgett et al's Nos. 2 Grimshaw, dr 1480 ft; and 3 Grimshaw, lcn. Elk Basin Oil Co.'s Nos. 6 Driver, dr 1000 ft; 7 Driver, rig; and 8 Driver, dr 1340 ft.

Edgar D. Floss' No. 1 Grimshaw, dr 3685 ft.

Godley Oil Co.'s No. 2 Owens, dr 1825 ft. Gulf Prod. Co.'s Nos. 1 Carmack, dr 250 ft; 4 Grimshaw, rigging up; and 1 Lisle, ur 1450 ft.

Mann et al's Nos. 2 Whittenburg, sd 100 ft; and 3 Whittenburg, rig. Monroe Oil Co.'s No. 1 Pickard, sd. repairing derrick, td 100 ft.

Nelson Oil Co.'s No. 1 Rhodes, dr 100 ft. New Domain Oil Co.'s No. 1 Lynn, dr 1985 ft.

Ohio Fuel Co.'s Nos. 1 Grimshaw, co 1520 ft; and 2 and 3 Grimshaw, lcns.

Planet Pet. Co.'s No. 1 Whittenburg, sd 2610 ft. Pomona Mutual Oil Synd.'s Nos. 2 R. D. Owen, dr 100 ft; 3, 4 and 5 R. D. Owens, lcns.

Ralco Oil Co.'s Nos. 5 Driver, rig; 6 Driver, dr 300 ft; 7 Driver, rigging up; 1 Rhodes, dr 2520 ft; and 1 Roark, dr 100 ft. Roddy et al's Nos. 1 Vick, pumping water 2200 ft; and 2 Vick, dr 2400 ft. Rosell Oil Co.'s Nos. 2-I Askew, sr 725 ft; 1-J Askew, dr 2325 ft; 1-E Grimshaw, sd 4025 ft; 1-D Grimshaw, dr 1150 ft; and 2-M Owens, dr 500 ft.

Simms Oil Co.'s Nos. 2 Driver, rig; 5 Owens, lcn; 6 Owens, sd 1400 ft; 7 Owens, dr 900 ft; and 8 Owens, rig. Leslie Spoontz's No. 1 Askew, set cas 2000 ft. Spoontz et al's No. 1 J. E. Parson, rig.

The Texas Co.'s Nos. 1 Bunger, dr 1475 ft; 2 Bunger, dr 1850 ft; and 1 Stoffers, dr 1950 ft.

Union Oil Co.'s Nos. 1 Bynum, fsh 2800 ft; 1 Grimshaw, dr 2550 ft; 2 Grimshaw, dr 1940 ft; 3 Grimshaw, rig; and 4 Grimshaw, rig.

Brownwood, Texas, Jan. 18.—Williamson and associates' No. 1 M. M. Cox, located in the north half of Brown County, is reported making about 30 barrels of oil and 100,000 cubic feet of gas from an oil sand found at 2427 feet. It is expected that the well will be shot before being completed. It is located near a small pipe line leading to independently owned refineries at Brownwood.

STEPHENS COUNTY PRODUCTION

Fort Worth, Texas, Jan. 17.—The average daily production of Stephens County during the past week was as follows:

	Barrels
The Texas Company	4,800
Mid-Kansas Oil & Gas Company	4,560
T. & P. Coal & Oil Company	4,410
Humble Oil & Refining Company	4,130
Gulf Production Company	3,340
Prairie Oil & Gas Company	3,010
Magnolia Petroleum Company	1,710
Fensland Oil Company	1,550
Landreth et al	1,000
The Sun Company	980
Plateau Oil Company	650
Pierce Oil Corporation	590
Sinclair Oil & Gas Company	430
Simms Oil Company	300
White Oil Corporation	135
Miscellaneous	20,080
Total	51,675
Last week	49,625

EASTLAND COUNTY PRODUCTION

Fort Worth, Texas, Jan. 17.—The daily average production of Eastland County during the past week was as follows:

	Barrels
T. & P. Coal & Oil Company	1,530
Sinclair Oil & Gas Company	1,215
Prairie Oil & Gas Company	1,095
Plateau Oil Company	650
Gulf Production Company	590
Magnolia Petroleum Company	515
The Texas Company	400
Humble Oil & Refining Company	270
Panhandle Refining Company	110
Sun Company	45
Mid-Kansas	40
Fensland Oil Company	25
Miscellaneous	6,045
Total	12,530
Last week	12,450

DESDEMONA PRODUCTION

Fort Worth, Texas, Jan. 17.—The average daily production for the Desdemona field for the past week was as follows:

	Barrels
Magnolia Petroleum Company	1,025
Humble Oil & Refining Company	485
Mid-Kansas Oil & Gas Company	310
Prairie Oil & Gas Company	165
The Texas Company	110
Sinclair Oil & Refining Company	95
Miscellaneous	2,920
Total	5,110
Last week	5,480

MISCELLANEOUS PRODUCTION

Fort Worth, Texas, Jan. 17.—The miscellaneous sections of Central West Texas made the following daily average production the past week:

	Barrels
Strawn	**1,400**
Corsicana	**795**
Brown County	**510**
Moran	**260**
Thrall	**140**
Coleman County	**105**
Totals	**3,210**

Stephens County Has Comeback With Several Completions

FORT WORTH, TEXAS, Jan. 18.—Proposed new development to be carried out during the next twelve months in the Central West Texas oil fields—Stephens County, Ranger and Desdemona—is beginning to take shape in the form of new locations and erection of derricks. Probably the largest drilling campaign to be announced so far in Stephens County is that of The Texas Company, which is reported to have made fifteen new locations during the past ten days and submitted recommendations for ten additional locations. However, it is a known fact that all of these proposed drilling sites will not be developed immediately, but they are looked upon as a barometer of the confidence the major companies have in the field. Each fair-sized producing well completed by the smaller oil companies and operators is being offset in most instances with a location for another test. In round figures, each of these additional wells represent an expenditure of $50,000 for equipment, labor, etc. The shortage of boiler water is retarding development to a great extent in all the fields.

After having lagged behind on its usual weekly quota of completions for the past month, Stephens County scored a comeback last week with a total of twelve completed oil and gas wells without a single dry hole. Included in the list of oil wells were three 500-barrel producers, two of which were located in the Curry-Aetna pool.

On the J. F. Brown tract, in the heart of the Curry-Aetna pool, the Fensland Oil Company's No. 3 well came in making 300 barrels natural and increased its production to 500 barrels after shot of 80 quarts from 3220 feet to 3260 feet. The same company's No. 2-A C. T. Stoker, which is located a short distance southeast of the Brown producer, is reported flowing 150 barrels natural early this week and shut down for a shot at 3215 feet. The top of the gray lime pay was picked up at 3175 feet.

The shallow producing horizon in the vicinity of the town of Frankell, in the south half of Stephens County, responded last week with a 250-barrel flowing well when the Quakins Petroleum Company brought in its No. 5 J. W. Harmon at 2040 feet. This well is flowing natural from an oil sand picked up at 2015 feet. The same company's No. 4 Harmon is shut down at 2070 feet after being shot with 40 quarts from 2035 to 2060 feet.

E. A. Landreth et al.'s No. 1 W. J. Brown, which was reported last week as being a possible extension to the Curry-Aetna pool to the northwest, is now shut down showing some oil with a total depth of 3295 feet. This well picked up a gray lime pay at 3230 feet for a thickness of 25 feet, and then drilled through water sand to 3290 feet. It is expected that a small shot will be placed in the upper section of the lime pay.

Drilling activity in the Ranger and Desdemona fields is being handicapped by the shortage of boiler water, and a number of wells fully equipped and ready to spud in have been idle for weeks waiting on rain. During the past week the States Oil Corporation's No 3 Harrell was abandoned as a dry hole at 1960 feet. A sand was encountered around the 1860-foot level.

STEPHENS COUNTY COMPLETIONS

Bryan Oil Corp.'s No. 3 Eugene Milam, 50 bbls and 10,000,000 cu ft gas 3285 ft.

Chapman's No. 1 Brown, 200 bbls natural 3210 ft.

Fensland Oil Company's No. 3 J. F. Brown, 500 bbls after shot 3260 ft.

Humble Oil & Ref. Co.'s No. 4 Jones, 200 bbls 3250 ft.

Jones & Johnson's No. 1 Walker & Caldwell, 500 bbls after shot 3230 ft.

Landreth et al's No. 2 C. T. Stoker, 500 bbls after shot 3240 ft.

Lyman Oil Synd.'s No. 1 Graham, 9,000,000 cu ft gas 3235 ft.

Oklahoma Pet. & Gas Co. and Pennock Oil Co.'s No. 9 Walker, 150 bbls after shot 3235 ft.

Quakins Pet Co.'s No. 5 Harmon, 250 bbls natural 3040 ft.

The Texas Co.'s No. 1 Wilson, 5,000,000 ft gas 3955 ft.

Wood & Bros.' Nos. 7 Childs, 200 bbls after shot 3220 ft; 8 Childs, 350 bbls after shot 3260 ft.

STEPHENS COUNTY DRILLING REPORT

Arkansas Natural Gas Co.'s No. 4 Ackers, dr 2900 ft. Atlantic Oil Prod. Co.'s Nos. 1 Gaston, dr 2825 ft; 1 Groggan, sd 3400 ft; A-4 West, dr 1310 ft. Atlantic Pool Synd.'s No. 1 Herron, sd 305 ft. Austin Oil Co.'s No. 1 Block "72," sd 2935 ft.

Big Bend Oil Synd.'s No. 1 Norton, sd 3135 ft. Brazos River Oil Co.'s No. 4 Massenburg, sd 3480 ft. Betrand et al's No. 1 Dozier, dr 2730 ft. Benkers Oil Corp.'s No. 2 McElroy, sd 3545 ft. Breckenridge-Brazos Oil Synd.'s No. 2 Brown, showing oil dr 3210 ft. Buckeye Dev. Co.'s Nos. 4 Walker, sd 1210 ft; 5 Walker, sd 3105 ft. Breckenridge-Cooperative Oil Co.'s No. 1 Walker, sd 1515 ft. Breckenrdge Drilling Co.'s No. 1 Brown, sd 2635 ft. Baker & Edson's No. 1 Barnes, dr 2895 ft. Benson Drilling Co.'s No. 1 Thomas, dr 975 ft. George Beggs' No. 1 Langford, fsh tools 1000 ft.

Campbell Drilling Ass'n's Nos. 1 Pierce, sd 3105 ft; 1 Walker & Coldwell, sd 2000 ft. California Pet. Co.'s No. 3 Brown, lcn. Channel Oil Co.'s No. 1 Moon, sd 3440 ft. Considine & Martin's No. 2 Martin, fsh 3260 ft. Commodore Oil Synd's No. 1 McDonald, sd 3030 ft. Chanler & Lee's No. 1 Weatherford, dr 3080 ft. Christie Bros.' No. 1 Yoes, dr 405 ft.

Drillers Oil Co.'s No. 1 Walker & Caldwell, sd 1060 ft. Dawson & Davis' No. 1 Cougher, dr 2100 ft. Dispatch Oil Co.'s No. 1 Sloan, sd 3370 ft. Direct Oil Co.'s No. 1 Sanders, sd 1575 ft.

Elliott Oil Synd.'s No. 1 Ingram, sd 535 ft. Erie Oil Co.'s No. 1 Ritchey, sd 935 ft.

Fensland Oil Co.'s Nos. 2-A C. T. Stoker, making 150 bbls, sd for shot 3215 ft; 4 J. F. Brown, dr 3100 ft. Findlay et al's No. 3 Stoker, sd for water 840 ft. Fidelity Oil Co.'s No. 2 Houston, dr 1190 ft.

Glasscock Prod. Co.'s No. 1 Cunningham, sd 1500 ft. Glenridge Oil Co.'s No. 5 Walker & Caldwell, sd 1135 ft. Gordon et al's No. 3 Walker & Caldwell, sd 865 ft. Guaranty Oil & Gas Co.'s No. 2 Sloan, sd 2285 ft.

Hellenic Oil Co.'s No. 1 Burgess, sd 2960 ft. Humble Oil & Ref Co.'s Nos. 8 Spain, dr up ur lugs 2525 ft; 2 Knox, dr 620 ft; 1 Boone, water trouble 3150 ft. Harry Bleam Synd.'s No. 1 Salter, sd 2675 ft. Henderson Oil Co.'s No. 5 Crowley, dr 2100 ft.

Johnson et al's No. 1 Gandy, sd 2840 ft. Jefferies & Womack's No. 1 Whitmire, sd 1865 ft. King, Booth & Nesbit's No. 1 Abney, pull pipe 3160 ft.

E. A. Landreth et al's No. 1 W. J. Brown, sd 3290 ft. Lathrope et al's No. 1 Grant, sd 650 ft. Lakeview Oil Co.'s No. 1 Lakeview, sd 1115 ft.

Mahlstedt Mook Oil Co.'s Nos. 5 Baker, dr 2740 ft; 6 Baker, dr 1100 ft. Miller et al's No. 1 Shipley, dr 2325 ft. Marine Oil Synd.'s No. 1 Walker, sd 2215 ft. M. & M. Drilling Co.'s Nos. 1 Mitchell, sd 830 ft; 1 School Block, sd 2855 ft. Mid-American Synd.'s No. 1 Pierce, sd 2710 ft. Maryland Drilling Co.'s No. 1 Owens, sd 1730 ft. Man-O-War Oil Synd.'s Nos. 1 Walker & Caldwell, sd 3080 ft; 2 Walker & Caldwell, sd 1110 ft. Mid-Kansas Oil & Gas Co.'s Nos. 2 Graham, making 5,000,000 ft gas and 25 bbls oil dr 3325 ft; 1 Hill (Acct. 2) dr 2800 ft; 7 J. W. Hill, dr 1620 ft; 6 Tullos (Acct. 1), dr 1210 ft; 3 Atkins (Acct. 2), dr 515 ft. Magnolia Petroleum Co.'s Nos. 1 Carper, dr 1100 ft; 9 McCauley, dr 2565 ft; 8 Rush, 2565 ft; 1 A. A. Hudzietz, mudding cas 3720 ft; 4 Ward, dr 2200 ft; 4 Glenn, dr 340 ft.

New Domain Oil & Gas Co.'s No. 3 Thorp, sd 2165 ft. Okla. Pet. & Gas Co. et al's Nos. 1 Davis, plugging

back from 3355 ft to shoot; 15 Sloan, dr showing oil and gas at 3220 ft. Operators Prod. Co.'s Nos. 1 Martin, ur 2410 ft; 2 Martin, sd 535 ft. Oregon-Texas Independent Oil Co.'s No. 1 Jones, sd 1655 ft.

Palo Pinto Pet. Co.'s No. 7 Swenson, sd 3325 ft. Penn-Breck Oil Co.'s Nos. B-2 Walker & Caldwell, dr 2300 ft; B-3 Walker & Caldwell, sd 1630 ft. Patterson & Mourer's No. 1 Sloan, sd 3000 ft. Prairie Oil & Gas Co.'s Nos. 6 Atkins, dr 1800 ft; 2 Cook, sd 3500 ft; B-3 W. H. Ackers, dr 2360 ft; 14 Sparks, sd 2560 ft; C-6 Veale, dr 2385 ft. Practical Oil Co.'s No. 1 Bascom, sd 1985 ft. Pay Tex Pet. Co.'s No. 2 Lane, dr 450 ft. Parker et al's No. 5 Stoker, dr 3125 ft.

Quakins Pet. Co.'s Nos. 4 Harmon, sd 2060 ft; A-6 Walker & Caldwell, sd 3105 ft; B-3 Walker & Caldwell, sd 2680 ft.

Ranger-Caldwell Oil & Gas Co.'s No. 1 Jones, sd 300 ft. Revere Oil Co.'s Nos. 1 Proctor, dr 3340 ft; 1 Andrews, sd 3340 ft; 1 McClure, sd 3620 ft; Riley et al's No. 3 Walker & Caldwell, sd 2265 ft. Roxana Pet. Corp.'s Nos. 3 Ball, dr 3425 ft; 4 Ball, plugging back from 3390 to 3355 ft; 6 Ball, pull pipe 3250 ft; 1 Corbett, dr 1525 ft. Roeser et al's Nos. 1 Thomas, dr 1900 ft; 2 Thomas, dr 1820 ft; 4 Stoker, dr 1365 ft.

Sharp & Mahoney's No. 1 Walker, sd 2515 ft. Sun Co.'s Nos. 8 Stoker, sd 2395 ft; 6 Kendrick, fsh cas 3065 ft; 1 Scruggs, dr 3325 ft; 2-B Stoker, dr 3025 ft. Society of American Inventors' No. 1 Curry, fsh cas 1810 ft. Stephens County Pet. Synd.'s No. 1 Williams, sd 505 ft. States Oil Corp.'s No. 1 Langford, rig. Snowden & McSweeney's No. 11 Ackers (Acct. 1), dr 1015 ft. Sinclair Oil & Gas Co.'s No. 1 McCullum, dr 740 ft.

The Texas Co.'s Nos. 5 Goodman, dr 2965 ft; 5 Keathley, dr 2995 ft; 6 Smith, dr 1300 ft; 2 Lee, dr 625 ft. Texas Eagle Oil & Ref. Co.'s No. 1 Walker & Caldwell, sd 2250 ft. Texas-Ohio Synd.'s No. 1 Stribbling, sd 3560 ft. Texas Pacific Coal & Oil Co.'s Nos. 2 Clark, sd 2735 ft; 1 Copeland, dr 2500 ft; 3 J. B. Stuard, dr 3540 ft; 1 Langford, dr 3600 ft; 9 W. P. Newell, rig. Taylor et al No. 1 Brown, plugging to abn 3280 ft. Ttylor & King's No. 1 McCord, dr 3705 ft.

United Oil Synd.'s No. 1 Graham, sd 1240 ft.

Van Ivan Synd.'s No. 1 Wright, sd 3260 ft. Virginia Co.'s Nos. 1 Lee, sd 3275 ft; 4 Lee, sd 2855 ft.

Webber-Harris Oil Co.'s No. 7 Walker & Caldwell, sd 715 ft. Wilkinson & Burke's No. 1 Parks, fsh ur lugs 1125 ft. Wolverine Oil Co.'s No. 1 Rickles, dr 2825 ft. Woods et al's No. 1 Sanders, sd 310 ft.

York & Bateman's No. 1 Sloan, sd 3425 ft.

New York, N. Y., Jan. 18.—Net production of Simms Petroleum Company for 1921 will approximate 1,158,940 barrels according to preliminary figures given out here. The figures for last year show an increase of more than 54,000 barrels over the 1920 production total.

The officers of the Company will not be surprised if the 1922 production exceeds the 1921 recovery of crude.

Petroleum Institute Production Estimates Found to be Correct

NEW YORK, Jan. 14.—The American Petroleum Institute has issued the following statement:

The estimates of production and other petroleum statistics issued by the American Petroleum Institute and the official figures of the U. S. Geological Survey recently have been questioned in several reputable journals, trade letters and other publications. We believe that the figures were challenged in good faith, with no intent to bring about any result except better service and more accurate information.

The principal article on the eubject appeared on December 21, 1921, headed "Gauge shows Oklahoma - Kansas Production Considerably Less than Estimated." The article contained a table purporting to show in detail the disposition of Kansas and Oklahoma in the aggregate was stated to be 366,039 barrels, which was compared with the estimates of the American Petroleum Institute for the week ending November 5, of 409,600 barrels; and the inference was drawn that the estimates of the Institute were more than 43,000 barrels higher than the actual production.

The same paper in its issue of January 4 states on page 21: "A company which made the actual gauge as of November 1 has within the past few days made the statement that estimates as since discovered did not include all the oil run; that omitted being principally production taken by the Magnolia Petroleum Co., in Healdton and other districts in the southern part of the state.

"That company is now adding to its total for its November check 42,260 barrels of oil additional for Oklahoma, bringing its total to 319,958 barrels."

The correction contained in the issue ot January 4 of course leaves no issue so far as the authenticity or correctness of the Institute's figures are concerned.

The question raised, however, led us to make a careful re-survey and re-check of all of the sources of information open to the Institute, and we take this opportunity to assure the industry that the estimates of production heretofore issued by the institute stand as issued. We have found no reason to change them. We believe they are conservative and are convinced that they do not over-state the actual production.

It seems fitting at this time to again call the attention of the industry to the method employed in making up our figures. The weekly estimates of the American Petroleum Institute are based upon telegrams received each week from oil companies maintaining scouting organizations costing many thousands of dollars a year for the purpose of ascertaining current production. We believe that these scouting organizations accomplished their purpose as accurately as it is humanly possible. The estimates are identical in character and result with those which go on the desks of the chief executives of the larger companies as a guide in the conduct of their business. They are checked against each other at the office of the Institute, and where discrepancies arise an attempt is made to run down the facts and reconcile the figures. The reporting companies are under no obligation whatever to furnish the statistics to the Institute. They do it as a matter of public spirit and public service, and are entitled to great credit therefor.

In conclusion an explanation as to the difference between the official figures of production of the U. S. Geological Survey and the estimates of the American Petroleum Institute will be of interest.

Each bulletin of the U. S. Geological Survey contains the following important note:—

The following figures, compiled from company reports to the U. S. Geological Survey, show the quantity of petroleum **transported** (the black-face is ours) from producing properties. Oil consumed on leases is not included. This item and net changes in producers' stocks at the beginning and end of the year are obtained by annual canvass and are included in the final statistics of production."

Each bulletin of the American Petroleum Institute setting forth production estimates contains the following:

"Note:—The above figures are purely estimates of gross production (all oil brought to the surface), and in general are based upon telegraphic reports from company scouts checked against each other. In a few instances the figures are from pipe line runs."

From a reading of the foregoing notes it will be apparent that the Institute is attempting to estimate **now** what the wells are doing now, whether the oil is being **"transported"** or whether it is being stored or consumed on the lease.

In the long run, over an extended period it will be found that the final figures as to production of the U. S. Geological Survey and the weekly estimates of the American Petroleum Institute taken in the aggregate will tally very closely; but for a particular month there may be what seems to be quite a substantial discrepancy between the two, because there may be a difference in quantity between the oil **"produced"** and the oil **"transported"** in the particular month. For example, if a well in Mexia is producing 5,000 barrels per day which is partially consumed on the lease and the balance is stored on the producer's property as currently produced in a given month, the estimates of the American Petroleum Institute will incorporate the production of that well now. The oil would appear in the figures of the U. S. Geological Survey when actually **"transported"**, or if it remained in storage on the producers property then it would appear after the annual canvass.

Three Tests Protect You

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Southwestern Life Bldg.
DALLAS, TEXAS

New Big Wells Increase Mexia Production

Natural decline however is large but flush production holds up field's output during week

MEXIA, TEXAS, Jan. 18.—Although the Mexia field is showing a very large daily natural loss on wells already completed new wells brought in in this field during the past week have had such large initial production that, coupled with a big increase in the production of the Humphreys interests, the field's daily production average is considerably higher than it has been before.

That the natural rate of decline per well is large is indicated by a production report received directly by The OIL WEEKLY from one major producer in that field. This report shows a production decline for that one company of more than 4000 barrels in two days' time, and the total production of the company on the first day considered was less than 25,000 barrels.

On the other hand, new wells with big initial production are not only maintaining the field's production, but have increased it immensely since last report.

Reaches High Point

The production of the field on January 16, according to the best data The OIL WEEKLY can collect, was approximately as follows, the subsequent days of the week seeing a decline from the figures given below:

Atlantic Oil Co.	
Roller	4,400
Gulf Co.	
Thompson No. 1	500
Thompson No. 2	1,600
Thompson No. 3	1,600
Thompson No. 4	1,800
Thompson No. 6	2,000
Slaughter	4,200
Total	11,700
Houston Oil Co.	
Lile, Nos. 3, 5, 6	4,600
Humble Oil Co.	
Thomson No. 1	500
Thomson Nos. 2 and 3	2,200
Thomson Nos. 4 and 5	2,300
Thomson Nos. 7 and 8	6,600
Thomson No. 10	2,700
Thomson No. 6	2,100
Slaughter	2,200
Abner	50
Stubenrauch	10
Shearer	150
Total	19,400
Kirby Pet. Co.	
Nussbaum	1,000
Church Lot	2,100
Monarch-Kirby Co.	
Harris Nos. 1, 2 and 3	14,000
Magnolia Pet. Co.	
Desenberg Nos. 2, 3, 4, and 5	3,052
Thompson	3,538
Mills	6,120
Slaughter	40
Total	12,750
Owenwood Oil Corp., Abner	5,800
Republic, Slaughter	3,200
Simms Oil Co., Carter	5,800
Simms Oil Co., Reid	2,900
Smith, Speer	50
Texas Company, Slaughter	2,053
U. S. Tex. Oil Co., Koenig	1,500
U. S. Tex. Oil Co., Anderson	7,000
Wichita Pet Co., Carter	4,600

MEXIA PRODUCTION

Mexia, Texas, Jan. 18.—The daily average production of the Mexia pool for the week ending January 14, was divided about as follows, the table showing comparisons with the previous week:

	Last Week	Prev. Week
Humphreys Companies	57,000	30,300
Humble Oil & Ref. Co.	21,000	25,500
Monarch-Kirby	16,000	14,500
Magnolia Pet. Co.	14,500	16,000
Simms Oil Co.	9,000	8,000
U. S. Tex. Pet. Co.	6,500	1,200
Owenwood Oil Corporation	5,800	5,000
Houston Oil Co.	5,700	6,000
Western Oil Fields Corp.	5,500	....
Middle States (Coyle et al)	4,400	4,500
Republic Production Co.	3,700	6,000
Tidal Oil Co.	3,700	2,400
Gulf Production Company	3,700	2,000
Atlantic Oil Prod. Co.	3,200	3,300
Kirby Petroleum Company	2,000	2,000
The Texas Company	1,800	2,500
Miscellaneous	650	50
Total	164,150	129,250

Woodbine Oil Co., Manning	50
Woodbine Oil Co., Slaughter	25
Western Oil Fields, Ross	9,500
Tidal Oil Co., Mills 1, 2 and 3	7,500
Humphreys-Mexia, all leases	53,200
Total Field	173,188

Big Wells

Completions during the week have added new production at the rate of approximately 10,000 barrels daily. The initial production of 20 new wells totaled 69,270 barrels, showing an average of 3500 barrels per well. Included in this calculation are five wells which averaged so low that in the Mexia field they are almost failures. Another feature of the increase in production was the discovery that the Owenwood Corporation's No. 1 Abner was choked in by sand in the gas trap. When this was cleaned out, the well jumped from 1000 to 10,000 barrels daily.

The Gulf Production Company completed four wells, No. 1 Slaughter making 4000 barrels, 2 Thompson 1500 barrels, 3 Thompson 4000 barrels and 6 Thompson 2000 barrels. The Kirby Petroleum Company's No. 1 Church Lot, taken over from Pink Hammond et al, was completed for 6000 barrels, and No. 1 Ross abandoned as a salt water well. The Humble Oil & Refining Company also abandoned a well, their No. A-1 Stubenranch, testing dry at the advanced depth of 3650 feet. Another well on the Harris acreage showed salt water and was abandoned, being the Texas Central Oil Synd.'s No. 6 Harris, depth 3065 feet.

The Humphrey-Mexia Company completed five wells, Nos. 4 and 6 Dancer making 1500 and 4000 barrels; 1 Kendrick and 4 Hayter, 5000 barrels each, and 1 Prather only 110 barrels. Other small wells were the Arkansas Natural Gas Company's No. 1 Mackey, 225 barrels; Tidal Oil Company's No. 4 Prather, 60 barrels, and Marshburn et al's No. 1 Mackey, 75 barrels. It will be noticed that two lease names appear for description of the four small wells. Another well under a thousand barrels was the Houston Oil Company's No. 7 Liles, swabbing a scant 800 barrels from 3030 feet.

The best well of the week was the U. S. Texas Petroleum Corporation's No. 3 Anderson, making 10,000 barrels from 3050 feet. Other completions include No. 2 Mills of the Magnolia Petroleum Company, 3500 barrels; Tidal Oil Company's No. 2 Mills, 4000 barrels; H. J. Parker's No. 1 Hines, 6000 barrels, and the Western Oil Fields Corporation's No. 1 Ross, 8000 barrels.

MEXIA COMPLETIONS

Arkansas Natural Gas Co.'s No. 1 Mackey, 225 bbls 3073 ft.

Gulf Production Co.'s No. 1 Slaughter, 4000 bbls 3015 ft; 2 Thompson, 1500 bbls 3050 ft; 3 Thompson, 4000 bbls 3040 ft; 6 Thompson, 2000 bbls 3045 ft.

Kirby Petroleum Co.'s No. 1 Church Lot, 6000 bbls 2990 ft (formerly Pink Hammond et al); 1 Ross, sw abn 3062 ft.

Houston Oil Co.'s No. 7 Liles, 800 bbls 3030 ft.

Humble Oil & Ref. Co.'s No. A-1 Stubenranch, dry and abn, 3650 ft; 10 Thompson, 3500 bbls 3065 ft.

Humphrey-Mexia Co.'s Nos. 4 Dancer, 1500 bbls 3020 ft; 6 Dancer, 4000 bbls, 3003 ft; 1 Kendrick, 5000 bbls, 2995 ft; 1 Prather, 110 bbls, 3087 ft; 4 Hayter, 5000 bbls 3050 ft.

Magnolia Petroleum Co.'s No. 2 Mills, 3500 bbls 3027 ft.

Marshburn et al's No. 1 Mackey, 75 bbls, 3080 ft.

H. J. Parker's No. 1 Hines, 6000 bbls 3040 ft.

Tidal Oil Co.'s No. 2 Mills, 4000 bbls, 3023 ft; 4 Prather, 60 bbls, 2990 ft.

Texas Central Oil Synd.'s o. 6 Harris, sw, abn 3065 ft.

U. S. Tex. Pet. Corp.'s No. 3 Anderson, 10,000 bbls, 3050 ft.

Western Oil Fields Corp.'s No. 1 Ross, 8000 bbls, 3015 ft.

MEXIA DRILLING REPORT

Allison et al's No. 2 Liles, dr 2100 ft. Arkansas Nat. Gas Co.'s Nos. 21 Mackey, dr 2500 ft; 3 Mackey, dr 2365 ft; 4 Mackey, dk; 5 Mackey, dr 1700 ft; 6 Mackey, dk. Atlantic Oil Prod. Corp.'s Nos. 1 Champion, sd 2500 ft; 1 Gunter, dr 1300 ft; 1 Mackey, dr out plug, 2990 tt; 2 Mackey, dr 2730 ft; 3 Mackey, standardizing, 3040 ft; 4 Mackey, dr out plug 3005 ft; 5 Mackey, dk; 6 Mackey, spudded; 7 Mackey, lcn; 1 Norris, dr 3165 ft; 2 Roller, dr 2700 ft; 3 Roller, sd 2930 ft; 4 Roller, dr 3040 ft; 5 Roller, dr out plug, 2030 ft; 6 Roller, dk; 1 Ross, dr 1180 ft; 2 Ross, fsh 2410 ft; 3 Ross, dk; 1 Sherrer, dr 450 ft.

Bankers Reserve Oil Co.'s No. 1 McLendon, fsh 3050 ft.

California Pet. Co.'s No. 1 Williams, dr 600 ft. Chappel et al's No. 1 Kirby, standardizing, 3050 ft. Coyle et al's Nos. 2 Carter, dr 1870 ft; 3 Carter, dr 500 ft; 4 Carter, dr 1210 ft.

Danziger Oil & Ref. Co.'s Nos. 1 Hensley, dr 2700 ft; 1 Koenig, dr 3000 ft; 1 Shearrer, dr 2990 ft. Dibble et al's No. 1 Kimble, spudded.

Ertell & Currie's No. 1 McCline, sd 3080 ft.

Falvey & Reynolds' Nos. 1 Kimble, spudded; 1 Thompson, standardizing, 3050 ft.

Galloway Oil & Ref. Co.'s Nos. 1 Curry, sd 1100 ft; 1 Favors, spudded; 1 Bluitt, dr 1320 tt. Glasscock Oil Co.'s No. 1 Bluitt, dr 1300 ft. Grayburg Oil Co.'s Nos. 1 Bluitt, dr 2000 ft; 2 Bluitt, fsh 2340 ft. Grogas et al's No. 1 Gordon, dr 1430 ft. Gulf Prod. Co.'s Nos. 1-A Nussbaum, sd 330 ft; 1 Shearrer, moving in rig; 2 Slaughter, dr 2500 ft; 3 Slaughter, dr 2870 ft; 4 Slaughter, dr 600 ft; 5 Thompson, dr 2430 ft; 7 Thompson, dr

Conservative Action Needed If Oil Industry Prospers

Tulsa, Okla., Jan. 16.—The absolute necessity for conservative action in the oil industry is as great today as it was some time ago, even though present conditions may be somewhat improved as far as prices go, in the opinion of Earl W. Sinclair of New York, formerly of Tulsa, who is renewing acquaintances here and attending to business. Mr. Sinclair was present at the directors meeting of the Exchange National Bank recently held, and tendered his resignation as chairman of the board, giving as his reason the press of other business. Mr. Sinclair is president of the Sinclair Consolidated Oil Corporation.

The low ebb which the refinued oil market has reached at this time is from a reaction in the industrial world, which is still in the convalescing stage, and has not effected a complete recovery in all lines, Mr. Sinclair says. He further points out that this off-season demand is not indicative of an unhealthy condition in the industry, but should serve as a signal for all to proceed slowly an dcarefully until the upturn comes.

2700 ft; 8 Thompson, dr 560 ft; 9 Thompson, dr 800 ft; 10 Thompson, dr 2800 ft.

Hale-Mexia Oil Synd.'s Nos. 1 Thompson, dr 2680 ft; 2 Thompson, dk. Houston Oil Co.'s Nos. 4 Liles, dk; 7 Liles, swabbing 800 bbls; 8 Liles, fsh 2320 ft; 9 Liles, dr 2850 ft.

J. K. Hughes Oil Co.'s Nos. 1 Ellis, dr 1200 ft; 2 Ellis, dr 2080 ft; 3 Ellis, dr 500 ft; 5 Ellis, dr 860 ft; 6 Ellis, dr 610 ft; 7 Ellis, dr 1500 ft; 8 Ellis, dr 340 ft; 9 Ellis, dr 600 ft; 10 Ellis, spudded; 11 Ellis, dk; 12 Ellis, dr 400 ft; 14 Ellis, dr 310 ft; 15 Ellis, rigging up. Humble Oil & Ref. Co.'s Nos. 1 Abner, dr 3050 ft; 3 Abner, dr 800 ft; 1 Foreman, spudded; 2 Foreman, spudded; 1 Koenig, dr 2000 ft; 2 Koenig, dr 1410 ft; 3 Koenig, dr 1480 ft; 1 Lindley, dk; 1 Morgan, dr 2200 ft; 2 Morgan, ds 1930 ft; 1 Sherrer, showing oil 3035 ft; 2 Sherrer, dr 2400 ft; 3 Sherrer, dr 540 ft; 4 Sherrer, spudded; 1-B Steubenranch, swabbing and bailing, 3090 ft; 2-B Steubenranch, sd 335 ft; 9 Thompson, dr 3025 ft. Humphreys-Mexia Oil Co.'s Nos. 1 Baker, standardizing, 2945 ft; 1-W Berthelson, sd 3110 ft; 2-W Berthelson, sand 3020 ft; 3-W Berthelson, dr 1600 ft; 4-W Berthelson, dr 840 ft; 5-W Berthelson, dr 2340 ft; 5-W Berthelson, dr 2310 ft; 6-W and 7-W Berthelson, rigging up; 8-W Berthelson, dr 400 ft; 9-W, 10-W, 12-W, 13-W, 17-W Berthelson, rigging up; 16-W Berthelson, dk; 18-W, 19-W, 20-W and 21-W Berthelson, spudded; 1 Best, dr 2800 ft; 2 Best, dr 800 ft; 1 Bluitt, dr 400 ft; 2 Bluitt; dk; 1 Clark, dr 3000 ft; 2 Clark, dk; 5 Clark, dr 3080 ft; 6 Clark, bailing 3050 ft; 7 Clark, dr 2300 ft; 8 Clark, spudded; 1 Dancer, fsh 2460 ft; 2 Dancer, 6-in cas set 2900 ft; 3 Dancer, dr 2700 ft; 4 Dancer, dr 3000 ft; 5 Dancer, dr 1300 ft; 7 Dancer, dr 500 ft; 8 and 9 Dancer, dks; 11 Dancer, rigging up; 12 Dancer, lcn; 1 Early, fsh 3160 ft; 1 Focke, dr 2290 ft; 2 Gamble, dr 600 ft; 3 Gamble, sd 380 ft; 4 Gamble, rigging up, 5, 6 and 7 Gamble, lcns; 8 Gamble, setting up; 2 Hayter, dr 2480 ft; 3 Hayter, dr 2630 ft; 4 Hayter, dr 2980 ft; 3 Kendrick, rigging up; 5 Kendrick, sd 325 ft; 6 Kendrick, dr 300 ft; 7 Kendrick, lcn; 2 Kennedy, standardizing 2990 ft; 4 Kollman, hole full oil 3060 ft; 5 Kollman, dr 2430 ft; 6 Kollman, sd 400 ft; 7 Kollman, dr 2500 ft; 8 Kollman, dr 2480 ft; 9 Kollman, dr 1370 ft; 10, 11 Kollman, dks; 12 and 13 Kollman, lcns; 1 McGraw, 6-in cas set 3015 ft; 1, 2 and 3 Nussbaum, dks; 1 Parkinson, sd 3010 ft; 2 Prather, fsh 3000 ft; 3 Prather, sd 3070 ft; 4 Prather, fsh 2350 ft; 5 Prather, sd 3000 ft; 3 Rogers, lcn; 1 J. Ross, dr 900 ft; 2 and 4 J. Ross, lcns; 3 J. Ross, spudded; 1 Hester Ross, dr 1500 ft; 1 Speer, fsh 3135 ft; 2 Thomas, dr 2430 ft; 3, 4, 5, 6 and 7 Thomas, dks; 8 Thomas, rigging up. Humphreys-Texas Co.'s No. 1 Jones, sd 2770 ft.

Iron Clad Oil Synd.'s Nos. 1 Gill, sd 850 ft; 1 Harper, sd 100 ft.

Jareco Oil Co.'s No. 1 Calame, dr 2900 ft. Jenkins & Truman's No. 1 Inglehart, sd 2930 ft. Jones & Earnest et al's No. 1 Sherrer, spudded. Jones et al's No. 1 Thompson, standardizing 3030 ft.

Kirby Pet. Co.'s Nos. 1 Bell, spudded; 4 Harris, dr 2700 ft; 5 Harris, dr 2900 ft; 1 Ross, sd 3070 ft; 2 Ross, sd 2890 ft; 3 Ross, dr 2900 ft; 3 Nussbaum, sd 3450 ft; 5 Nussbaum, sd 3450 ft; 6 Nussbaum, standardizing 3200 ft; 7 Nussbaum, sd 3140 ft; 8 Nussbaum, sd 3230 ft. Kirkpatrick et al's No. 1 Trotter, dk. Knickerbocker Oil Co.'s No. 1 McLendon, sd 3245 ft.

McCormick-Mexia Oil Co.'s No. 1 Speigh, dk. McNeal & McDowell's No. 1 Tidwell, dr 2210 ft.

Magnolia Pet. Co.'s Nos. 4 Desenberg, fsh 2930 ft; 3 Mills, dr 2430 ft; 4 Mills, dr 1910 ft; 5 Mills, dr 1630 ft; 6 Mills, dr 800 ft; 7 Mills, dr 1585 ft; 1 Moffitt, dr 2930 ft; 1 Nussbaum, dr 3000 ft; 2 Nussbaum, dr 2890 ft; 3 Nussbaum, dr 2740 ft; 1 Ross, sd; 2 Ross, dr 2700 ft; 3 Ross, dr 3040 ft; 4 Ross, dr 2930 ft; 5 Ross, dr 2860 ft; 1 Stroud, 6-inch casing set 3075 ft; 2-A Thompson, dr 2950 ft; 3-A Slaughter, testing casing 2935 ft; 4-A Thompson, dr 2340 ft; 1-B Thompson, dr 2830 ft; 2-B Thompson, sd 2890 ft; 3-B Thompson, dr 2890 ft; 5-B Thompson, sd 2920 ft; 6-B Thompson, dr 1260 ft; 7-B Thompson, sd 2890 ft; 9-B Thompson, dr 900 ft; 10-B Thompson, fsh 1740 ft; 11-B Thompson, dk; 12-B Thompson, dr 400 ft. Mexia Chief Oil Synd.'s No. 1 Bennett, sd 2060 ft. Mexia Drillers Prod. Synd.'s No. 1 Parks, spudded. Mexia Extension Synd.'s No. 1 Williams, dr 900 ft. Mexia Midway Oil Co.'s No. 1 Harris, dr 2870 ft. Mexia Oil Prod. Synd.'s No. 1 Sherrer, rigging up. Mexia Oil Synd.'s No. 1 Long, fsh 2980 ft. Mexia Robinson Synd.'s No. 1 Robinson, dk. Mexia Simms Oil Synd.'s No. 1 Simms, sd 1070 ft. Mexia Southern Synd.'s No. 1 Trotter, sd 3230 ft. Mexia Southwestern Synd.'s No. 1 Curley, dk. Mexia Subbie's No. 1 Carner, sd 1360 ft. Mexia Terrace Oil Co.'s No. 1 Oliver, tsh 2975 ft. Mexia Texas Oil Co.'s No. 1 Deis, dk. Mexia Wonder Pool Oil Co.'s No. 1 Whitcomb, sd 2150 ft. W. H. Milliken et al's No. 1 Bluitt, dr 2500 ft. Mitchell & Jones' No. 1 Carter, sd 2930 ft. Murphey-Henderson Prod. Co.'s No. 1 Hughes, dk.

New Domain Oil & Gas Co.'s No. 1 Teagle, sd at 3150 ft.

Occidental Oil Co.'s No. 2 Stroud, rigged up. Osage-Gulf Oil & Ref. Co.'s No. 1 Parks, rigged up. Owenwood Oil Corp.'s Nos. 2 Abner, dk; 3 Abner, dr 2600 ft.

H. J. Parker's Nos. 1 Hines, standardizing 2975 ft; 2 Hines, 6-inch casing set 2970 ft. William Penn Oil Co.'s No. 1 Gardner, dk. Phillips & Kier's No. 1 Adamson, sd 3070 ft. Plateau Oil Co.'s No. 2 Freeman, dk. Providence Pet. Co.'s Nos. 1 Koenig, dr 2580 ft; 2 Koenig, dr 2600 ft; 3 Koenig, rigging up.

Ranger Collins Oil Co.'s No. 1 Wade, fsh 2770 ft. Republic Prod. Co.'s Nos. 2 Slaughter, dr 2800 ft; 3 Slaughter, setting 12-inch casing 285 ft; 4 Slaughter, dk. Tex Rickard et al's No. 1 Head, dk.

Seay-Cranfill Co.'s Nos. 1 Thompson, sd 2600 ft; 2 Thompson, dr 2900 ft. Senog Oil Co.'s No. 1 Nussbaum, sd 2150 ft. Schultz & O'Brien's No. 1 Evans, sd 200 ft. Shaffer et al's No. 1 Roller, rigged up. Simms Oil Co.'s Nos. 1 Bennett, lcn; 2 Bennett, sd 225 ft; 3 Bennett, lcn; 2 Carter, dr 300 ft; 3 Carter, rigging up; 4 Carter, dr 1250 ft; 5 Carter, dr 300 ft; 6 Carter, dr 270 ft; 7 Carter, dk; 1 Mackey, dr 2800 ft; 2 Mackey, dr 2545 ft; 2 Reed, dr 2100 ft; 3 Reed, dr 2100 ft; 4 Reed, sd 2950 ft; 5 Reed, rigging up; 6 Reed, 6-inch casing set 2945 ft. Ben D. Simon's No. 1 Koenig, dr 2400 ft. Skinner & Bennett's No. 1 Scott, dk. Skinner & McGinnis' Nos. 1 Carter, dr 1500 ft; 2 Carter, dr 300 ft; 3 Carter, dr 2640 ft.

Tidal Oil Co.'s Nos. 1 Carter, dr 400 ft; 2 Carter, dr 2500 ft; 3 Carter, dr 150 ft; 4 arter, dr 1400 ft; 5 Carter, dr 2490 ft; 6 Carter, dr 1200 ft; 1 McGraw, rigging up star machine 2070 ft; 3 Mills, bailing 3030 ft; 4 Mills, dr 2730 ft; 1 Thompson, dk; 5 Mills, dr 2650 ft; 2 Thompson, dr 250 ft; 1 Prather, standardizing 3020 ft; 2 Prather, dk; 3 Prather, dr 2700 ft. Tarkington et al's No. 1 Hornsbeck, sd 1645 ft. Texas Central Oil Synd.'s Nos. 1 Cook, dk; 2 Harris, dr 2640 ft; 3 Harris, sd 1790 ft; 4 Harris, dr 1700 ft; 5 Harris, sd 2500 ft; 6 Harris, abn 3070 ft; 7 Harris, sd 2740 ft; 1 Hines, dr 2650 ft; 2, 3 and 4 Hines, dks; 2 Slaughter, dr 800 ft; 3 Slaughter, dr 1270 ft; 1 Stroud, dr 3650 ft. Texas-Mexia Synd.'s No. 1 Matsiak, fsh 2800 ft. Todd et al's No. 1 Freeman, sd 330 ft. Trist et al's No. 1 Mackey, rigging rotary. Tuckett et al's No. 1 Bluitt, sd for water. Turnbow Oil Co.'s No. 1 Bluitt, dr 300 ft.

U. S. Tex Pet. Corp.'s Nos. 2 Anderson, dr 2700 ft; 4 Anderson, setting 6-inch casing 2945 ft; 5 Anderson, dr 2550 ft; 6 Anderson, fsh 2400 ft; 7 Anderson, dk; 8 Anderson, dr 2360 ft; 9 Anderson, dr 900 ft; 10 Anderson, dr 1250 ft; 1 Fish Pond, spudded; 1 Koenig, dr 2430 ft; 2 Koenig, dr 1900 ft; 3 Koenig, dr 900 ft.

Wade et al's No. 1 Pitts, setting liner 3130 ft. Welsh et al's No. 1 Carter, dr 2900 ft. Western Oil Fields Corp.'s Nos. 1 Bluitt, dr 300 ft; 2 Bluitt, dr 2400 ft; 1 Gamble, dr 2500 ft; 1 Williams, setting cas 2880 ft; 2 Williams, dr 2460 ft; 3 and 4 Williams, spudded. White Eagle Oil & Ref. Co.'s Nos. 1 Liles, dr 1550 ft; 2 Liles, dr 3060 ft; 3 Liles, setting cas 2960 ft; 4 Liles, dk; 5 Liles, setting cas 2970 ft; 6 Liles, dr 1500 ft; 7 Liles, dk; 8 Liles, rigging up; 9 Liles, dr 400 ft; 1 Perry, dk. Wittse, Sheffler & Hill's No. 1 School lot, dr 1700 ft. Woods et al's No. 1 Kimbell, dk. Woodbine Oil Co.'s No. 1 Slaughter, standardizing, 3050 ft.

Freestone County

Atlas Oil Co.'s No. 1 Young, dk.

Barber et al's No. 1 King, dk. Bestley & Mahon's No. 1 Kirvin, dr 2400 ft. Bison Oil Co.'s No. 1 Thompson, dr 1000 ft. Burk-Tex Prod. Co.'s No. 1 Bonner, dr 2900 ft.

Abner Davis' No. 1 Adamson, sd 3200 ft. Dickey & Arataka's No. 1 Longbotham, to shoot 3000 ft. Dan Dillon et al's No. 1 Bounds, dk. Dillon, McGraw & Rickard's No. 1 Stubbs, dk. Dorado Oil Co.'s No. 1 Edwards, bailed dry 2950 ft, to dr deeper.

Greenwood et al's Nos. 1 Pitts, dr 3470 ft; 1 Ross, dr 2700 ft.

Hamil et al's No. 1 Hackney, dr 3220 ft. Harrison & Hoover's No. 1 Bounds, fsh 2770 ft. Hicks et al's No. 1 Jenkins, dk. Hog Creek Carruth's No. 1 Watley, dr 1800 ft. Humble Oil & Ref. Co.'s No. 1 McClellan, rigging up.

Mexia Wortham Townsite's No. 1 Carroll, dr 1600 ft.

National Consolidated Oil Co.'s Nos. 1 Coleman, to test 2250 ft; 1 Nussbaum, spudded and sd for water.

O. K. Oil & Gas Co.'s No. 1 Knight, dr 1900 ft.

Plains Pet. Co.'s No. 1 Moore, dk.

Root & Knippley's No. 1 Young, dr 1000 ft.

Sewell & Baer's No. 1 Smith, dk. Shankle et al's No. 1 Peurifoy, sd 2960 ft. Smith et al's No. 1 Stubbs, dk. Stewart Drilling Co.'s No. 1 Holt, rigging up.

Tate et al's No. 1 Perry, sd 1100 ft. Texi-Ana Oil Co.'s No. 1 Wright, dr 1200 ft. G. W. Tucker et al's No. 1 Red, dk.

Navarro County

Baker et al's No. 1 Davis, dk. S. C. Bouser et al's No. 1 Coleman, rigging up rotary.

Corsicana Deep Well Co.'s No. 1 Burk, fsh 2500 ft. Cor-Tex Oil Co.'s No. 1 Gray, tsh 3800 ft. Currie & Ertell's Nos. 1 Phipps and 2 Phipps, dks. Mart Curtis' No. 1 Barrington, dr 1360 ft.

L. T. Dodwell's No. 1 Wilson, sd for water.

Frazier et al's No. 1 Lee, dr 2900 ft.

Galloway Oil Co.'s No. 1 Moody, sd for water.

Homaokla Oil Co.'s No. 1 McGraw, dr 2360 ft. Humble Oil & Ref. Co.'s No. 1 Bounds, dk. Humphreys-Texas Oil Co.'s Nos. 1 Cole, dr 2100 ft; 1 English, setting cas 2920 ft; 1 Garrett, dr 2700 ft; 1 Price, fsh 2565 ft.

Magnolia Pet. Co.'s Nos. 1 Baum, dr 500 ft; 1 Finch, sd for water, 2500 ft. Mexia Wortham Synd.'s No. 1 Stubbs, rigging up. Maxwell Bros.' No. 1 Owens, spudded. Miller & Kimbrow's Nos. 1 Edens, sd 300 ft; 1 Rayston, sd 300 ft. Merritt et al's No. 1 Chummey, rig on ground. Mutual Operators Oil Co.'s No. 1 Tucker, dr 2760 ft.

New Way Oil Co.'s No. 1 Chaney, dr 2800 ft.

Panhandle Ref. Co.'s Nos. 1 Wright, rigging up; 2 Wright, dk.

Sanders & Wheelock's No. 1 Bressie, moving in tools. Simms Oil Co.'s No. 1 Gilbert, dr 800 ft. Hardy Sitton's No. 1 Price, dk.

Tex-Ana Oil Co.'s No. 1 Wright, dk.

A. E. Farley et al's No. 1 Keiph, dr 2600 ft.

Mexia, Texas, Jan. 16.—A. F. (Fred) Schubert, formerly with the Lucey Manufacturing Corporation, and who is now associated with A. D. Waide in the Waide Drilling Company, is receiving the congratulations of his friends on the completion of the first well by the drilling company at Mexia. The well was the U. S.-Mex. big well on the Anderson tract which is one of the big wells so far completed in the Mexia field.

Schubert has a bunch of friends all over the State and they are all hoping that the success which he had with the first well at Mexia will be duplicated on other wells. The company is runing two strings of tools.

Mexia, Texas, Jan. 14.—Plans for the reorganization of the Humphreys-Mexia and Humphreys-Texas Companies under the name of the Humphreys Oil Company were announced today by Colonel E. A. Humphreys, president of the two companies. The new company will be capitalized at $15,000,000, with $8,000,000 outstanding. The Pure Oil Company will own approximately 23½ per cent of the outstanding stock and most of the balance held by Colonel Humphreys and his family. Stock in the two companies to be absorbed will be exchanged share for share.

The Humphreys Oil Company will own half of the stock of the Humphreys-Pure Oil Pipe Line Company, now building a pipe line from Mexia to Beaumont and constructing storage. Construction work on the refinery to be built on the Gulf Coast will not begin before summer, it was said.

Colonel Humphreys left here today for New York to attend to the details of the reorganization of the companies, and expects to go to Cuba and Panama for a vacation when that has been attended to.

West Columbia Pool Extended to West; Good Well Wednesday

HOUSTON, TEXAS, Jan. 18.—The average daily production of the Gulf Coast fields for the week ending last Saturday was 108,725 barrels, an increase of 580 barrels daily over the record of 108,145 the previous week. This makes the two weeks average higher than for a similar period since November of last year. The principal increases by fields during the week were at Hull, Orange and Blue Ridge, the latter occasioned by the completion of the Oil Production Company's No. 1 Lee which made 6,000 barrels. This well is now making around 4,000 barrels of fluid of which 2,700 barrels is oil.

West Columbia shows a loss in the daily average for the week of approximately 4,000 barrels as compared with the previous week, but the completion of two wells there will tend to again bring it up to the higher level. The Humble Oil & Refining Company's No. 3 Melgard, completed for 1,000 barrels at 3,390 feet, is being watched with interest because of its location, about 600 feet west of the nearest production in the field. This morning the Texas Company's No. 58 Hogg come in flowing around 5,000 barrels from 2,736 feet, with the wash pipe in the hole.

Orange is still holding interest because of a number of near completions. The Humble Oil & Refining Company's No. 5 Chesson is still flowing around 14,000 barrels of net oil, and everything is being set for the completion of the Gulf Production Company's No. 2 Chesson which is in the sand at the 4,000 foot level. Several other wells are also reaching the new production level. Orange is now past the 20,000 barrels daily production mark and with 100 active wells, is the largest development activity in the Gulf Coast Section.

The Edgerly Petroleum Company's No. 1 Carbello well which, when completed for 7,000 barrels on September 30 of last year, made the Orange field a real factor in oil production, staged a remarkable come-back during the week. When completed originally the wash pipe was left in the hole. The well had quit producing and when the wash pipe was pulled preparatory to cleaning out, the well came back flowing 1,500 barrels of fluid, 20 per cent of which was water and bs. The flow has now settled down to 1,000 barrels, 700 barrels net oil. The Thrift Oil Company's No. 1 McGuire, east of Cow Bayou, blew sand and oil for 3 hours from 3,430 feet and sanded up.

At Hull the Monarch Oil & Refining Company's No. 2 Harrison, a workover, was finally completed making 150 barrels, flowing by heads. This well made a showing for a much larger well when the pay was first penetrated at 3,200 feet some time ago, but sanded up. The Gulf Production Company's No. 8 Thomas Fee was abandoned at 3,750 feet.

At Pierce Junction the Humble Oil & Refining Company's No. 1 Nellie Cooper drilled into the salt and was abandoned at 1,200 feet.

At Damon Mound the record for the week was two failures and a small pumper. A lone completion at Goose Creek was a dry gasser.

WEST COLUMBIA PRODUCTION

Houston, Texas, Jan. 17.—The average daily production of the West Columbia field during the past week was divided approximately as follows:

	Barrels
The Texas Company	19,020
Humble Oil & Refining Company	9,300
Gulf Production Company	2,850
George Hyde et al	700
United Drilling & Development Co.	200
Crown Oil & Refining Company	250
The Sun Company	165
Monarch-Stribbling	150
Miscellaneous	75
Total	32,710
Last week	36,030

WEST COLUMBIA COMPLETION

Humble Oil & Refg. Co.'s No. 3 Melgard, 1000 bbls, 3390 ft.

WEST COLUMBIA DRILLING REPORT

Humble Oil & Refg. Co.'s Nos. 13 Japhet, wo, milling; 29 Japhet, wo, dr 3660 ft; 32 Jahpet, dr 2010 ft; 2 Bullock-Nash, dr 2180 ft; 9 Pipkin-Lee, dr 1960 ft.

United D. & D. Co.'s No. 3 Hogg, trying to pull screen, 3200 ft.

Crown Oil & Refg. Co.'s No. 2 Hogg, dr 4015 ft.

Texas Co.'s Nos. 48 Hogg, dr 1950 ft; 53 Hogg, wo, pulling cas; 58 Hogg, wo, dr 2700 ft; 68 Hogg, dr 3040 ft; 72 Hogg, dr 650 ft; 73 Hogg, dk; 74, 75 and 76 Hogg, lcns; 6 Abrams, dr 2873 ft.

Gulf Prod. Co.'s Nos. 5 H. Masterson, dr 2300 ft; 5 McMeans, dr 3000 ft; 7 Tom Hogg "A," dr 3410 ft.

SPINDLE TOP COMPLETION

Wilson & Broach's No. 2 Heyward, abn 950 ft.

SARATOGA COMPLETION

Rio Bravo Oil Co.'s No. B-39, perforated at 800 ft, pumping 3 bbls, depth of hole 1260 ft.

SARATOGA DRILLING REPORT

San Bernard Oil Co.'s No. 7 Hooks, sd.

Regna Weldon's No. 1 Nancy Fuller, dr 1800 ft.

SOUR LAKE DRILLING REPORT

Gulf Production Co.'s No. 47 Tarver-Hardin, dr 2400 ft.

Jackson Trustee's No. 10 Thompson, rigging up to deepen.

Lake Oil Co.'s No. 13 Bashara, wo, set screen 2040 ft.

Humble Oil & Refg. Co.'s No. 18 Hardin County, rigging up to work over.

BARBERS HILL DRILLING REPORT.

Humble Oil & Refg. Co.'s No. 1 Fee, setting up; 2 additional locations.

Hindman-Pugh Oil Co.'s No. 1 Japhet, dr 2200 ft.

Mills Bennett's No. 1 Chambers County, set 10 in 1150 ft, dr 1400 ft.

United Petroleum Co.'s No. 7 Richardson, dk.

United Petroleum Co.-Mills Bennett et al's No. 1 F. Barrow, dr 2800 ft.

HULL PRODUCTION

Houston, Texas, Jan. 17.—The average daily production in the Hull field during the past week was distributed approximately as follows:

	Barrels
Republic Production Company	5,500
Gulf Production Company	4,200
Humble Oil & Refining Company	1,800
Houston Production Company	2,000
Monarch Oil & Refining Company	650
Empire Gas & Fuel Company	550
The Texas Company (Royalty)	420
Miscellaneous	120
Total	16,040
Last week	14,775

HULL COMPLETIONS

Monarch Oil & Refining Co.'s No. 2 Harrison, wo. 150 bbls by heads, 3200 ft.

HULL DRILLING REPORT

Higgins Oil & Fuel Co.'s No. 4 Barrow, wo, dr 3200 ft.

Humble Oil & Refg. Co.'s Nos. 3 Guedry, wo, dr 2850 ft; 5 Guedry, wo, dr 3260 ft.

Houston Prod. Co.'s No. 4 Barngrover, dr 2675 ft.

Republic Prod. Co.'s No. 52 Dolbear, dr 2250; 42 Dolbear, wo, sd 3255 ft.

Empire Oil & Gas Co.'s No. 3 Barngrover, wo, fsh.

Yount-Lee Oil Co.'s No. 1 Merchant, wo, dr 2895 ft.

Theis, Wilkerson & Parker Oil Co.'s No. 1 Carr, sd.

Liberty County Oil Co.'s No. 2 Palmer, dr 3665 ft.

Gulf Production Co.'s Nos. 7 Scarborough, bldg dk; 3 Morris-Phillips, wo, fsh 2400 ft; 9 Phoenix Dev. Co., fsh.

HUMBLE PRODUCTION

Houston, Texas, Jan. 17.—The average daily production for the Humble field during the past week was distributed approximately as follows:

	Barrels
The Texas Company	3,770
Galena Signal Oil Company	1,300
Czereaux & Martin	300
Gulf Coast Oil Corporation	225
Invincible Oil Company	210
Humble Oil & Refining Company	100
Bradley Brothers	100
Southern Petroleum Company	100
Crown Oil & Refining Company	90
Miscellaneous	250
Total	6,645
Last week	6,500

HUMBLE DRILLING REPORT

Texas Co.'s Nos. 257 Landslide, dr 2150 ft; 258 Landslide, dr 1900 ft; 31 Stevenson, wo, to pump, 2580 ft; 38 Stevenson, wo, to deepen; 30 Stevenson, wo, to deepen; 26 C. O. & G., dr 2873, showing oil and gas; 32 Koehler, dr 2830 ft.

BLUE RIDGE COMPLETION.

Oil Production Co's., No. 1 Lee, 6000 bbls, 4030 ft.

BLUE RIDGE DRILLING REPORT.

Texas Co.'s No. 1 Robinson, sidetracking 3530 ft; 8 Robinson, dr 1700 ft.

Blue Ridge Prod. Co's., No. 1 Robinson, wo, dr 3395 ft.

Oil Issues Co's, No. 2 Booth, wo, dr 3700 ft.

Gulf Prod. Co's Nos. 4 Blakely "B", dr 2500 ft; 5 Blakely "B", dr 900 ft; 5 usher, rigging up.

Sinclair Oil & Gas Co's Nos. 2 Lee, rigging up; 1 Davidson, dk.

Coastal Dome Oil Co's No. 1 Blakely, dr 3010 ft.

TEXAS GULF COAST FIELDS

ORANGE PRODUCTION

Houston, Texas, Jan. 17.—Production in the Orange field the past week was as follows:

	Barrels
Humble Oil & Refining Company	15,300
Gulf Production Company	3,200
Orange Petroleum Company	1,450
Edgerly Petroleum Company	675
Sun Company	30
Brownie-Babbette Oil Company	35
Total	20,690
Last week	19,810

ORANGE COMPLETIONS

Orange Petroleum Co.'s No. 1 Lucas, 250 bbls, 3360 ft.

ORANGE DRILLING REPORT

Humble Oil & Refg. Co.'s Nos. 1 Tasco, waiting on standard rig; 3 Winfree, sd 2870 ft; 4 Winfree, setting up; 5 Winfree, dr 3230 ft; 6 Winfree, dr 2620 ft; 7 Winfree, dk; 6 Chesson, setting up; 7, 8, 9 and 10 Chesson, setting up; 1 Aaronson, dr 3560 ft; 1 Myers Fee, fsh 3780 ft; 2 Myers Fee, dk; 3 and 4 Myers Fee, dks; 5 and 6 Myers Fee, setting up; 2 Kishi 5 acres, dr 3760 ft.

Orange Petroleum Co.'s No. 4 Winfree, dr 3430 ft; 5 Winfree, dr 1490 ft; 6 Winfree, rigging up; 7 Winfree, dk; 3 Chesson, pulling liner to deepen.

Thrift Oil Co.'s No. 1 McGuire, set screen 3430 ft, blew out oil and sand for three hours, sanded up.

Edgerly Petroleum Co.'s No. 3 Carbello, dr 3100 ft; 4 Carbello, dr 3040 ft.

Brownie-Babbette Oil Co.'s Nos. 1 Smith-Foreman, dr 3455 ft; 1 McLean, casing collapsed, will mill out of 8-in cas; 2 McLean, dr 3700 ft; 3 McLean, blew out mud and gas, will set 3-in inside strainer; 4 McLean, dr 1795 ft; 5 McLean, dr 1200 ft; 6 McLean, dk and pit; 7 McLean, dk and pit; 8 McLean, dk lumber on ground; 9 McLean, loc; 10 McLean, dk; 3 Pevito, fsh 2730 ft.

Amerada Petroleum Co.'s Nos. 1 Kishi-Lang, milling 3400 ft; 2 Kishi-Lang, dk; 3 Kishi-Lang, dk.

Sandy Creek Oil Co.'s No. 1 Stanton, blew out, 1470 ft.

Atlantic Oil Prod. Co.'s No. 2 Moore, dr 3250 ft; 3 Moore, dr 1800 ft; 1 Hager, dr 2900 ft; 2 Hager, dr 1950.

Cow Bayou Oil Co.'s No. 2 State, rigging up

Sun Co.'s No. 1 Gunstream, dr 3550 ft.

Monarch Oil & Refg. Co.'s No. 1 Granger, dr 3205 ft.

Gulf Coast Oil Corp's. No. 1 Leon, dr 3260 ft; 2 Leon, dr 2400; 3 Leon, loc.

Link Oil Corp.'s No. 1 Adams, dr 3440 ft.

Port Arthur Oil Co.'s No. 1 LeFlore, dr 4055 ft.

Carter-Jewtt Oil Co.'s No. 1 Tyrrell, dr 2600 ft.

Sinclair Oil & Gas Co.'s No. 1 Granger, dr 3100 ft.

Emerson & Moore's No. 1 Jackson, dr 1800 ft.

Big Marie Oil So.'s No. 1 Turner, dr 950 ft.

Oil Issues Co.'s No. 1 Little Six, rigging up; 2 Little Six, rigging up.

Gulf Production Co.'s No. 2 Chesson, dr 3910 ft; 1 Chesson "A", dr 500 ft; 2 Chesson "A", dr 1100 ft; 3 Chesson "A", rigging up; 1 Chesson, wo, dr 3260 ft; 2 Lee Hager Fee, rigging up; 3 Hager & Moore, dr 1750 ft; 4 Hager & Moore, riging up; 5 Hager & Moore, dk; 1 Briggs & Moore, dr 3350 ft; 2 Briggs & Moore, dr 3910 ft; 3 Briggs & Moore, rigging up; 4 and 5 Briggs & Moore, locs; 1 Kishi Lang "B", wo, washing down to bottom; 2 Kishi Lang, rigging up to deepen; 3 Kishi Lang, wo, fsh; 4 Kishi Lang, dr 4005 ft; 5 Kishi Lang, rigigng up;6 Kishi Lang "B", dk; 2 Wm. Winfree fee, dr 2700 ft; 2 Wm. Winfree Fee "A", dr 3700 ft; 3 Wm. Winfree Fee "A", dr 3400 ft; 4 Wm. Winfree Fe "A", dr 3610 ft; 5 Wm. Winfree Fee "A", rigging up.

MISCELLANEOUS PRODUCTION IN THE TEXAS GULF COAST

Houston, Texas, Jan. 17.—The daily average production for the miscellaneous Texas Coastal fields for the past week was distributed as follows:

	Last Week	Prev. Week
Sour Lake	4,730	4,675
Damon Mound	2,300	2,300
Saratoga	1,950	1,980
Somerset (S. A.)	1,750	1,750
Batson	1,200	1,375
Spindle Top	990	975
Blue Ridge	3,485	650
Barbers Hill	460	475
Nacogdoches	250	250
Dayton	200	200
Markham	125	125

PIERCE JUNCTION PRODUCTION

Houston, Texas, Jan. 17.—The average daily production for the Pierce Junction field during the past week was distributed approximately as follows:

	Barrels
Gulf Production Company	2,250
Snowden & McSweeney	1,500
Humble Oil & Refining Company	350
Total	4,100
Last week	4,000

PIERCE JUNCTION COMPLETION

Humble Oil & Refg. Co.'s No. 1 Nellie Cooper, abn, sw, 1200 ft.

PIERCE JUNCTION DRILLING REPORT

Humble Oil & Refg. Co.'s Nos. 1 Dooley 16 acres, dr 3000 ft; 2 Dooley 16 acres, rigging up; 3 Dooley 16 acres, dr 2820 ft; 5 Dooley TX, dr 3910 ft; 6 Dooley TX, loc; 7 Dooley TX, dr 2590 ft; 8 Dooley TX, blew out at 2600 ft and caught fire, cleaning up; 1 Whitehead, dr 3390 ft; 2 Nellie Cooper, loc; 2 Fitzsimmons, sidetracking 1410 ft; 3 Fitzsimmons, dr 2360 ft.

Sinclair Oil & Gas Co.'s No. 1 Holt, dr 2800 ft.

R. E. Brooks' No. 1 Link-Dooley, dr 3950 ft.

Seagate Pet. Co.'s No. 1 Edmondson, sd 3900 ft.

Snowden & McSweeney's Nos. 4 Cain, dr 3700 ft; 5 Cain, dr 3500 ft.

Link et al.'s No. 1 Mowery, dr 3100 ft.

Sun Co.'s Nos. 1 Fitzsimmons, dr 3310 ft; 1 Whitehead, Blk 14, dr 1700 ft; 1 Whitehead, Blk 9, rigging up.

Florida-Texas Oil Co.'s No. 1 Myrs, dr 850 ft.

Gulf Production Co.'s Nos. 11 Taylor, dr 3750 ft; 12 Taylor, dr 2310 ft; 1 Fitzsimmons-Hamman, dr 2710 ft; 1 Whitehead-Hamman, dr 2700 ft; 3 Cain, dr 4000 ft; 4 Cain, dr 2200 ft; 5 Cain, dr 3000 ft.

GOOSE CREEK PRODUCTION

Houston, Teyas, Jan. 17.—The average daily production for the Goose Creek field for the past week was divided approximately as follows:

	Barrels
Humble Oil & Refining Company	5,300
Gulf Production Company	3,900
The Sun Company	525
Crown Oil & Refining Company	400
Gulf Coast Oil Company	350
Turnbow Oil Corporation	225
Goose Creek Oil Corporation	150
International	150
Southerland Oil Company	125
Miscellaneous	175
Total	11,300
Last week	12,275

GOOSE CREEK COMPLETION

Humble Oil & Refg. Co.'s No. 30 Schilling, gas well, 4295.

GOOSE CREEK DRILLING REPORT

Humble Oil & Refg. Co.'s Nos. 41 Gaillard 25 acres, dr 2250 ft; 26 Gaillard, fsh for liner, 2840 ft; 47 Gaillard, dr 1300 ft; 24 Gaillard-Penn, dr 100 ft; 29 Schilling, dk; 33 Simms-Smith, wo, dr 2650 ft; 24 Sweet, setting up.

Gulf Coast-Crown's Nos. 19 Gaillard 21 acres, to pump, 2780 ft; 32 Gaillard, perf cas for test at 3100; TD 3400 ft; 35 Gaillard, dr 2500 ft.

International Oil Co.'s No. 1 Grace Addey, dr 2790 ft.

Hisgans Pet Co.'s Nos. 1 Busch, moving rig to deep from 3620 ft; 1 Bruce, Jr., dr 3370 ft.

Hugo Allison Pet. Co.'s No. 1 Atkinson, washing to bottom, 3790 ft.

D. F. Bryan Oil Co.'s No. 2 Wright, dr 2585 ft.

Gulf Prod. Co.'s Nos. 25 Bmt. Pet. Co., bailing 3400 ft; 5 Isenhour, salt water, 2900 ft; 6 Rosenthal State, dk; 1 Chapman-Bryan, dr 3650 ft; 5 Rucker-Schilling, wo, dr 3250 ft; 14 Wright "A," wo, dr 3350 ft.

DAMON MOUND COMPLETIONS.

Sinclair Oil & Gas Co.'s No. 12 Masterson, 50 bbls, 3420 ft; 1 Lockwood, abn 3850 ft.

Humble Oil & Refg Co.'s No. 4 Gallagher, abn.

DAMON MOUND DRILLING REPORT.

Sinclair Oil & Gas Co.'s No. 22 Bryan, dr 2989 ft; 11 Masterson, sidetracking 3030 ft; 23 Bryan, dr 2300 ft; 2 Williams, rigging up.

Kansas City, Jan. 11.—At the annual meeting of the Taxman Refining Company, which was held at Kansas City, all the old officers were re-elected for the coming year. The report for the year proved that it was a very successful one.

Wichita Falls, Texas, Jan. 17.—Thomas J. Taylor, independent oil operator and retired banker of this city, dropped dead in his office in the City National Bank building at noon today. Death was attributed to heart trouble. He was 57 years of age.

El Dorado Production Declines to New Low Level; Few Completions

EL DORADO, ARK., Jan. 17.—With the average daily production showing a net loss of 4220 barrels during last week, the production of this field went lower than has been recorded during the history of the field since the first few months of its existence as such. Fifteen new wells completed during the week, one of them a dry gasser, added only 3305 barrels through their combined new production. The best producer completed during the week was good for only 750 barrels, the average of the 14 completed as oil wells being 257 barrels.

Although the volume of flush production was small, there was less showing of salt water than has been the case during the last several weeks when the majority of larger producers averaged as much or more water than oil in the flow.

Statistics compiled as of January 1, 1922, covering the El Dorado field from the discovery until that date, reveal that of 625 wells completed, 562 were oil wells, 43 failures and 20 gas wells. The total production for the year amounted to 9,910,410 barrels, valued at $13,347,615.

The record monthly production and value of oil produced, shows as follows:

Month	Barrels	Prevailing Price	Value
March	301,250	$.70	$210,875
April	450,000	.70	315,000
May	455,600	.70	318,920
June	701,000	.70	490,700
July	1,085,000	.70	759,500
August	1,500,000	.70	1,050,000
September	1,265,000	1.50	1,897,500
October	1,415,000	2.00	2,830,000
November	1,350,000	2.00	2,700,000
December	1,387,560	2.00	2,775,120
Total	9,910,410		$13,347,615

The companies having production in the field, the number of wells controlled by each, and the average daily production on January 1, was as follows:

Company	No. Prod. Wells	Daily Prod. Barrels
Amerada Pet. Corp.	8	1,500
Arkansas Natural Gas Co.	14	2,300
Arkansas Invincible	9	950
Constantin Oil Corp	13	700
Caddo Central Oil Co.	16	1,000
Federal Oil Company	6	250
Foster Oil Company	7	610
Gulf Refining Company	53	3,200
Gladys Belle Oil Company	16	800
Humble Oil & Ref. Co.	23	1,250
Keen & Woolf	12	700
Magnolia Pet. Company	11	600
Pure Oil Company	10	925
Sun Company	27	2,100
White Oil Corporation	16	500
Miscellaneous	221	27,375
Total	562	44,710

To December 1, 1921, storage tanks had been built in the field with a total capacity of 3,210,000 barrels. On that date the oil stored in these tanks amounted to 960,800 barrels, leaving more than 2,000,000 barrels of storage space available.

EL DORADO COMPLETIONS

Arkansas Natural Gas Co.'s No. 209 Cullen, 4-19-15, 500 bbls 2185 ft.

Arnett et al's No. 1 Trull, 25-17-16, 75 bbls, 2210 ft.

Bailey et al's No. 1 Greenwood, 5-19-15, 50 bbls 2165 ft.

Gulf Refining Co.'s No. A-5 Pratt, 7-18-15, 10 bbls 2171 ft; 2 Thurkill, 29-18-15, 725 bbls 2146 ft; 3 Thurkill, 750 bbls 2159 ft.

Hobbs Oil Co.'s No. 3 A. Hinson, 6-18-15, 310 bbls 2130 ft.

J. L. Nelson's No. 1 Thurkill, 29-18-15, 260 bbls 2140 ft.

Pure Oil Co.'s No. 5 Brown, 8-18-15, 190 bbls 2148 ft.

Sec. 31 Oil Co.'s No. 3 Alderson, 31-17-15, 50 bbls 2184 ft.

Skelly Oil Co.'s No. 3 Helwig, 6-18-15, 160 bbls 2153 ft.

Standard Oil Co.'s No. 2 Helwig, 7-18-15, 40 bbls 2174 ft.

Stell Petroleum Co.'s No. A-1 Cates, 4-19-15, 110 bbls 2176 ft.

Sunflower Oil Co.'s No. 1 Buswell, 19-18-15, 75 bbls 2187 ft.

Woodley et al's No. 4 Alderson, 31-17-15, 6,-000,000 cu ft dry gas 2171 ft.

EL DORADO DRILLING REPORT

Arkansas Natural Gas Co.'s Nos. 207 Woods, 29-18-15, set cas 2130 ft; 216 Woods, testing 2160 ft; 220 Woods, dr plug 2080 ft; 221 Woods, set 6-in 2110 ft; 222 Woods, dr 1260 ft; 223 Woods, set 6-in 2114 ft; 224 Woods, set 6-in 2105 ft; 225 Woods, set 6-in 2120 ft; 226 Woods, set 6-in 2102 ft; 228 Woods, set 6-in 2116 ft; 230 Woods, dr 1450 ft; 231 Woods, set 6-in 2100 ft. Ark-Texas Oil Co.'s Nos. 1 Bramlett, 31-17-15, sd; 1 McWilliams, 5-18-15, sd. Arnett et al's No. 2 Trull, 25-17-16, dr 950 ft. Associated P. & R. Co.'s Nos. 1 Carroll, 29-18-15, set 6-in 2077 ft; 2 Carroll, dr 810 ft; 3 Carroll, dr 200 ft. Arkansas P. & R. Co.'s No. 1 Compton, 5-19-15, testing 2170 ft.

Barton et al's No. 1 Mack, 5-18-15, sd; 1 Willett, 18-17-16, sd. Beall & Thomas' No. 1 Pendleton, 36-18-14, tested dry, sd 2615 ft. Buley et al's Nos. 1 Cates, 33-18-15, fsh; 2 Cates, set 6-in 2145 ft. Big Four Oil Co.'s Nos. 4 Smith, 18-18-15, to pump, 2156 ft; 5 Smith, rigging up with cable tools, 2150 ft. Block Oil Co.'s No. 1 Benson, 5-19-15, set 6-in 2102 ft; 1 Easter, 21-19-11, dk. Boger et al's No. 1 Cates, 4-19-15, to pump, 2196 ft; 2 Cates, fsh 2196 ft. Boger & Jones' No. 1 Pendleton, 20-17-15, dr 1410 ft. Boyle et al's No. 1 Greenlee, 33-18-15, sidetracking, 2140 ft. E. M. Brown's No. 1 Grace, 3-18-14, sd; 1 Goodwin, 16-16-14, sd. Bradstreet et al's No. 2 Sewell, 32-17-15, sd. Bryan et al's No. 1 Miller, 14-17-16, dk.

Caddo Central Oil Co.'s No. 2 Jolly, 32-17-15, sd. Carleton & Jones' No. 1 McGough, 16-17-13, sd. Carter & Morgan's No. 1 McKinney, 4-17-15, sd. Casper & Cline's No. 1 Woods, 20-18-15, fsh, 2136 ft. Chaddick et al's No. 1 Woods, 20-18-15, dr 1010 ft. Clark & Greer's No. 2 Craig, 17-18-15, dk. Coates & Sewell's Nos. 2 Benson, 4-19-15, dr 1332 ft; 3 and 4 Benson, rigging up; 2 Pendleton, 20-18-15, dr 1880 ft. Congress Oil Co.'s No. 1 Swilley, 8-18-15, sd 2500 ft. Constantine Ref. Co.'s Nos. 2 Coombs, 18-18-15, dr 1580 ft; 3 Burns, 31-17-15, set cas 2160 ft; 4 Burns, rigging up; 2 Goodwin, 36-17-16, dk; 2 Hill, 12-18-16, sd; S-1 A. Hinson, 7-18-15, set 8-in in 2162 ft; S-2 A. Hinson, dk; 4 A. Hinson, 6-18-15, dr 1582 ft; 1 J. A. Hinson, 7-18-15, set cas 2178 ft; 4 J. T. Hinson, rigging up; 5 Robinson, 6-18-15, dk; 1 Lassiter, 18-18-15, set cas 2125 ft; 1 Thompson, 19-18-15, dr 850 ft; 3 Thompson, dr 2172 ft; 5 Thompson, to pump, 2182 ft. Cordell Synd.'s No. 2 Kirksey, 24-17-16, dk. Cooper & Stewart's No. 1 Burns, 32-18-15, testing 2176 ft. H. C. Cotton's No. 1 Cates, 33-18-15, sd 2195 ft. Cox Realization Co.'s Nos. 3 Carroll, 17-18-15, fsh; 5 Carroll, rigging up. Cox et al's No. 1 Pendleton, 20-18-15, dk. Creek Oil Co.'s No. 3 DeCou, 8-18-15, sd. Crosby Synd.'s Nos. 1 Jackson, 29-17-15, sd; 1 Murphy, 30-17-15, sd. Curtis Nelson et als' No. 1 Cordell, 29-7-15, dk. Cycle Oil Co.'s No. 1 Dumas, 15-17-16 sd.

Dauche et al's No. 1 Tuffts, 31-16-14, sd. Davis et al's No. 1 Brady, 29-17-15, dk; 1 Carlock, 18-17-15, dk; 1 Carnish, 32-17-15, sd. Davis Oil Co.'s No. 2 Snowden, 20-18-15, dk. Daniels et al's No. 1 C. W. Hinson, 12-18-16, dk. Daniels Drlg. Co.'s No. 1 Morgan, 2-18-16, sd. Warren Daniels' No. 1 Pendleton, 20-18-15, sd. Dorado Oil Synd.'s No. 1 Cox, 32-17-16, sd.

East Side Dev. Co.'s No. 1 McCurry, 30-17-14, dr 1545 ft. El Dorado Oil Corp.'s No. 2 Pendleton, 20-18-15, dr 1950 ft. El Dorado Dev. Co.'s No. 1 Sorrell, 33-17-15, sd. El Dorado-Eagle Oil Co.'s No. 2 Snowden, 20-18-15, to pump 2156 ft. El Dorado-Langston Oil Synd.'s No. 1 Zeigin, 33-17-15, sd El Dorado-Lucas Oil Co.'s No. 1 Newton, 12-17-16, sd. El Dorado Oil

(Continued on page 191.)

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One Hundred Per Cent Perfect

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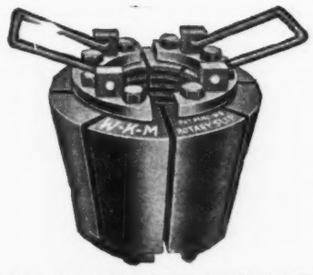

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WRITE US FOR FULL INFORMATION

W-K-M COMPANY

308 BEATTY BUILDING Houston, Tex.

North Louisiana Production Near 100,000 Barrels Daily

SHREVEPORT, LA., Jan. 17—For the second consecutive week the average daily production of the Haynesville Field last week showed an increase of about 10,000 barrels in the daily average production. This brings the field's average to 58,000 barrels daily, and offsetting slight losses in the other North Louisiana fields, brings the total for the district to almost 100,000 barrels daily. This makes the production of the North Louisiana fields the highest it has reached since the peak of production at Homer in the middle of the year 1920.

Completions in the Haynesville area during the week, numbering 14 producers and no failures, add 18,000 barrels of new production. Homer had only one completion, a failure in the National Development Company's No. 1 Featherstone,. Section 20-21-7, which showed salt water at 1400 feet. The Caddo area had four completions, all workovers at advance depths, including one failure and four small producers. Bull Bayou did not record a completion.

A catalogue of the suits filed in the district court at Haynesville during the past few months, since the discovery of oil there, shows that a total of 3,031 acres, most of it in the proven area, is involved in litigation at this time. Practically every individual firm operating in the field is involved in one or more of the 36 suits now on the court calendar.

HOMER PRODUCTION

Shreveport, La., Jan. 17.—The average daily production for Homer, Claiborne Parish, last week was approximately as follows:

	Barrels
Standard Oil Company	5,590
Gulf Refining Company	4,365
Gilliland Oil Company	2,910
Louisiana Oil Refining Corporation	1,510
Simms Oil Company	1,460
Arkansas Natural Gas Company	1,035
The Texas Company	945
White Oil Corporation	845
United Oklahoma Oil Company	755
Sinclair Oil Corporation	390
Miscellaneous	670
Total	20,475
Last week	21,165

BULL BAYOU PRODUCTION

Shreveport, La., Jan. 17.—The average daily production for the Bull Bayou field for last week was approximately as follows:

	Barrels
Gulf Refining Company	1,750
The Texas Company	1,240
Fortuna Oil Company	1,065
Continental Asphalt Company	825
Seamans Oil Company	520
Standard Oil Company	195
Sinclair Oil Corporation	150
Simms Oil Company	25
Miscellaneous	2,575
Total	8,345
Last week	8,360

HAYNESVILLE PRODUCTION

Shreveport, La., Jan. 17.—The average daily production for the Haynesville field in Claiborne Parish for the past week was divided approximately as follows:

	Barrels
Ohio Oil Company	16,560
Gilliland Oil Company	12,355
Louisiana Oil Refining Corporation	11,710
Roxana Petroleum Company	3,310
Ziegen et al	2,215
Miscellaneous	12,330
Total	58,480
Last week	48,355

CADDO PRODUCTION

Shreveport, La., Jan. 17.—The average daily production for Caddo Parish last week was approximately as follows:

	Barrels
Gulf Refining Company	3,035
Standard Oil Company	1,910
The Texas Company	1,830
Dixie Oil Company	675
Fortuna Oil Company	425
Louisiana Oil Refining Corporation	390
Caddo Central Oil & Refining Co.	315
Miscellaneous	2,980
Total	11,560
Last week	12,390

London, Eng., Jan. 10.—A dividend of 150 florins a share on account of prospective dividend for the fiscal year 1921 has been decided on by the management of the Royal Dutch-Shell Petroleum Company with approval of the board of commissaries.

BOSSIER COMPLETION

National Oil Co.'s No. 1 Ellston, 10-19-11, flowing 25 bbls, 357 ft.

BOSSIER DRILLING REPORT

Atlantic Oil Prod. Co.'s No. 1 Bollinger, 21-22-13, dr 2000 ft.

Chandler et al's No. 1 Mobley, 26-20-11, sd; 1 Bliss & Weatherbe, 10-19-11, rigging up.

Frost Oil Co.'s No. 1 Robinson, 10-19-11, set 10-in, 135 ft.

Humble Oil & Ref. Co.'s No. 1 Bliss-Weatherbe, 10-19-11, dk.

Keen & Woolf's No. 1 Parsons, 10-19-11, dr 260 ft.

Langhorne et al's No. 1 W. L. Morgan, 34-18-12, reaming to bottom, 000 ft. Love Bros. et al's No. 1 Broom, 5-21-13, dr 75 ft. Louisiana Oil Ref. Co.'s Nos. 1 Bodcaw Fee, 15-19-11, dr 280 ft; 2 Bodcaw Fee, lcn; 3 Bodcaw Fee, rigging up.

McClanahan et al's No. 1 Thigpen & Harold, 15-20-13, testing 2060 ft.

National Oil Co.'s No. 2 Ellston, 10-19-11, dr 175 ft.

Paraffine Oil Co.'s No. 1 Smith, 8-19-11, dk.

R. O. Roy & Co.'s Nos. 2 Caplis, 25-16-12, dr 1175 ft; 1 Railroad Lands, 11-19-11, sd; 8 Railroad Lands, 15-19-11, set 6-in 200 ft; 2 Scandlin, dr 100 ft.

Sandford et al's No. 1 Miller, 19-19-11, lcn. Standard Oil Co.'s Nos. 4 McDade, 12-16-12, dr 500 ft; 1 Smith, 23-19-11, rigging up; 1 Wyche, 14-19-11, rigging up.

Transcontinental Oil Co.'s No. 2 Bliss-Weatherbe, 3-19-11, tested dry 400 ft, dr 450 ft.

HAYNESVILLE COMPLETIONS

Gilliland Oil Co.'s Nos. 1 R. L. Bond, 27-23-8, 275 bbls, 2740 ft; 2 R. L. Bond, 16-23-8, 300 bbls, 2750 ft; 4 R. L. Bond, swabbing 250 bbls, 2745 ft.

Houston Oil Co.'s No. 1 White, 20-23-8, 2500 bbls, 2780 ft.

Louisiana Oil Ref. Co.'s No. 1 Tally, 15-23-8, 2750 ft.

Ohio Oil Co.'s No. 1 G. A. Hilburn, 22-23-8, 5000 bbls, 2795 ft; 4 Milner, 4000 bbls, 2800 ft; 8 Anna Taylor, 325 bbls, 2810 ft; 1 Shady Grove Church, 27-23-8, pumping 120 bbls, 2806 ft; 1 J. T. Waller, 14-23-8, 3375 bbls, 2815 ft.

Palmer Trust Co.'s No. A-1 Goree, 27-23-8, 150 bbls, 2860 ft.

Roxana Pet. Co.'s No. 4 Williamson, 28-23-8, 60 bbls, 2780 ft.

Sec. 27 Oil Co.'s No. 1 Aiken, 27-23-8, pumping 40 bbls, 2840 ft.

V. K. F. Drilling Co.'s No. 2 Goree, 28-23-8, 40 bbls, 2800 ft.

HAYNESVILLE DRILLING REPORT

Arkansas Nat. Gas Co.'s Nos. 228 Knox, 17-23-8, set 6-in, 2660 ft; 229 Knox, dr 2410 ft. Alto O. & G. Co.'s No. 1 Owens, 30-23-6, sd. Ahefeldt et al's No. 1 Haynesville L. Co., 24-23-8, dr 2325 ft; 1 W. A. Wire, set 6-in 2740 ft. Amerada Pet. Co.'s Nos. 2 Hudson, 17-23-8, dr 2680 ft; 3 Hudson, dr 1100 ft; 4 Hudson, dr 1250 ft.

Belchie & Laskie's No. 1 Orr, 27-23-8, dk. Bernstein et al's No. 2 Goree, 27-23-8, bailing 2815 ft.

Clairbourne-La Oil Co.'s No. 3 McClung, 29-21-7, set 6-in 1930 ft. Clark & Greer's No. 1 Parker, 28-23-8, sd.

Federal Oil Co.'s No. 1 Stovall, 31-23-8, dr 1375 ft. Federal Pet. Co.'s No. 1 Baucum, 17-23-8, dr 650 ft. Fortuna Oil Co.'s No. 1 Bailey, 32-23-8, dr 1320 ft.

Gilliland Oil Co.'s Nos. 3 R. L. Bond, 16-23-8, dr 2010 ft; 5 R. L. Bond, rigging up; 6 R. L. Bond, set 6-in 2680 ft; 7 and 8 R. L. Bond, dks; 9 R. L. Bond, dr 2410 ft; 10 R. L. Bond, set 6-in 2680 ft; 1, 2, 3 and 4, R. P. Bond, 15-23-8, lcns; 1 J. H. Coon, set 6-in 2700 ft; 3 DeLoach, 22-23-8, dr 2210 ft; 4 DeLoach, dk; 5 DeLoach, dr 1620 ft; 6 DeLoach, dk; 7 and 8 DeLoach, dks; 1 Garrett,, 24-23-8, set 6-in, 2710 ft; 1 Goodwin, 15-23-8, dk; 2 Goodwin, lcn; 3 Goodwin, lcn; 1 Sherman, 23-23-8, set 6-in 2700 ft; 2 Sherman, dk; 3 Sherman, sd; 4 Sherman, lcn; 5 Sherman, lcn; A-3 G. W. Taylor, 14-23-8, dr 2175 ft; A-4 G. W. Taylor, dr 650 ft; B-5 G. W. Taylor, dr 825 ft; B-6 G. W. Taylor, dr 700 ft; B-7 G. W. Taylor, dr 875 ft; B-8 G. W. Taylor, dr 1110 ft; 1 Waller, 13-23-8, lcn. Greer Oil Co.'s No. 1 C. H. Taylor, 7-23-8, dr 2720 ft. Gulf Ref. Co.'s Nos. 1 Alford, 6-23-4, dr 275 ft; 1 Camp & Pritchet, 24-23-8, dr 1490 ft; 1 S. Taylor, 14-23-8, dr 2590 ft; 2 S. Taylor, dk; 1 Winn, 26-23-8, dr 2860 ft.

Hawthorne et al's No. 1 Elmore, 33-23-8, sd. Harrell et al's No. 1 Brinkley, 18-23-4, sd. Haynesville-Star Oil Co.'s No. 1 Crump, 9-23-7, set 8-in 2040 ft. Houston Oil Co.'s Nos. 2 T. G. Knox, 20-23-8, set 4½-inch, 2690 ft; 3 T. G. Knox, dk; 2 White, lcn; 3 White, lcn. S. S. Hunter's No. 1 Phillips, 32-23-8, bailing, 2822 ft. Humble Oil & Ref. Co.'s Nos. B-1 Hearn, 28-23-8, set 6-in 2680 ft; 1 W. R. Kennedy, 16-23-8, dr 2160 ft; 2 W. R. Kennedy, dr 2310 ft; 2 Knox, 20-23-8, dr 2750 ft; 3 Knox, dr 2220 ft. Hunt & Smith's No. 1 Garrett, 24-23-8, dr 2760 ft.

Louisiana Oil Ref. Co.'s Nos. 7 Bond, 21-23-8, dr 2730 ft; 8 Bond, set 6-in 2680 ft; 5 DeLoach, 22-23-8, dk; 6 DeLoach, lcn; B-2 DeLoach, dr 500 ft; B-3 DeLoach, rigging up; 1 Hilburn, 28-23-8, lcn; 2 Stonecipher, 16-23-8, sidetracking 2440 ft; 2 Talley, 15-23-8, dr 250 ft; 3 Tally, rigging up; 4 Tally, rigging up; 5 Tally, rigging up; 6 Tally, dk; 7 and 8 Tally, lcns; 2 Waller, 14-23-8, fsh; 3 Waller, dr 2510 ft; 4 Waller, dr 1920 ft; 5 Waller, dr 2110 ft; 6 Waller, dr 1620 ft; 7 Waller, rigging up; 8 Waller, dr 1325 ft. La. Nat. Gas Co.'s No. 1 Elkins, 30-23-8, lcn abn. Livert Oil & Gas Co.'s No. 2 Hudson, 17-23-8, dr 2600 ft; 3 Hudson, lcn.

McCullough Trustee's No. 1 Parker, 29-23-8, sd. Mission Oil Co.'s No. 1 Birdsong, 28-23-8, dr 2865 ft. Moore Oil Co.'s No. 1 Baucum, 35-23-8, sd.

Ohio Oil Co.'s Nos. 1, 2, 3 and 4 C. D. Been, 22-23-8, lcns; 3 R. P. Bond, 21-23-8, dr 2460 ft; 4 R. P. Bond, dr 2110 ft; 8 R. P. Bond, dr 1060 ft; 9 R. P. Bond, dr 150 ft; 10, 11, 12, 14, 15 and 16 R. P. Bond, lcns; 1 and 2 J. L. Bond, 22-23-8, lcns; 1 W. F. Bond, 21-23-8, fsh; 2 W. F. Bond, dr 1800 ft; 3, 4 and 5 W. F. Bond, lcns; 3 Camp, 15-23-8, lcn; 1 Camp, 24-23-8, to pump, 2840 ft; 2 Camp, lcn; 1 J. L. Garrett, set 6-in 2790 ft; 2, 3 and 4 J. L. Garrett, dks; 5 J. L. Garrett, dr 1250 ft; 6 J. L. Garrett, dr 600 ft; 1 Goodwin, 16-23-8, lcn; 3 J. H. Hearn, 22-23-8, fsh; 4 Hearn, dk; 5 Hearn, rigging up; 6 Hearn, rigging up; 2 G. A. Hilburn, rigging up; 3 S. T. Hunt, 16-23-8, set 6-in, 2730 ft; 4 S. T. Hunt, dk; 5 S. T. Hunt, lcn; 1 J. P. Lowe, 17-23-8, lcn; 1 J. L. Lowe, dr 250 ft; 3 Milner, 22-23-8, rigging up; 5 Milner, dr 2110 ft; 6 Milner, dk; 1 S. R. Parker, fsh; 2 S. R. Parker, dr 1940 ft; 3 S. R. Parker, dr 250 ft; 4 S. R. Parker, dr 250 ft; 5 S. R. Parker, dr 200 ft; 6 S. R. Parker, lcn; 7 S. R. Parker, dk; 11 Anna Taylor, 14-23-8, dr 2760 ft; 12 and 13 Anna Taylor, lcns; 1 Anna Taylor (Acct. 2), 15-23-8, dr 250 ft; 2 Anna Taylor, dr 250 ft; 2 G. W. Taylor, dr 650 ft; 3 G. W. Taylor, dr 875 ft; 4 G. W. Taylor, dk; 5 and 6 G. W. Taylor,

lcns; 7 G. W. Taylor, rigging up; 8, 9 and 10 G. W. Taylor, lcns; 2 Silas Taylor, Sr, 14-23-8, dr 2600 ft; 3 Silas Taylor, Sr, dk; 2 Shady Grove Church, 27-23-8, dr 350 ft; 1 C. W. Sanders, 16-23-8, dk; 1 Sherman, 15-23-8, dr 2750 ft; 2 Sherman, dr 2725 ft; 3 Sherman, dk; 1 S. C. Waller, 14-23-8, dr 910 ft; 1 J. T. Waller, 23-23-8, dr 1000 ft; 2 J. T. Waller, dr 250 ft; 2 and 3 Waller, 14-23-8, dks; 4 Waller, dr 1725 ft; 5 Waller, dr 1365 ft; 6 and 7 Waller, dks; 8 Waller, rigging up; 3 and 4 Anna Williamson, dks; 5 Anna Williamson, dr 1200 ft; 6, 7 and 8 Anna Williamson, lcns. Oliver Oil Co.'s No. 1 Warren, 33-23-8, dk. Osage-Gulf Oil Co.'s No. 1 Lewis, 28-23-8, dk.

Palmer Trust Co.'s No. B-1 Goree, 27-23-8, fsh; 4 Goree, dk; 5 Goree, dr 2190 ft; 4 Williamson, 28-23-8, set 6-in 2770 ft.

D. C. Richardson's No. 1 Lewis, 28-23-8, rigged; 2 Lewis, dk. Roan et al's No. 1 Lewis, 32-23-8, dk. Rogers et al's No. 1 Beevil, 25-23-8, sd. Roxana Pet. Co.'s No. 4 Bond, 21-23-8, bailing 2740 ft; 5 Bond, dr 2150 ft; 6 Bond, dr 1180 ft; 7 Bond, rigging up; 1 Williamson, 28-23-8, to pump 2795 ft; 5 Williamson, sd; 6, 7 and 8 Williamson, lcns; 2 Lowe, 16-23-8, set 6-in, 2740 ft; 3 Lowe, dk; 4, 5, 6, 7 and 8 Lowe, lcns. Russell et al's No. 1 Sneed, 24-23-8, dk.

Scott et al's Nos. 2 C. Taylor, 16-23-8, dr 2530 ft; 3 C. Taylor, dr 2360 ft; 4 C. Taylor, dr 1965 ft. Standard Oil Co.'s Nos. 3 Aiken, 27-23-8, to pump, 2860 ft; 4 Aiken, dk; A-3 Barker, 21-23-8, set 6-in, 2700 ft; A-4 Barker, dr 2425 ft; B-1 Barker, 20-23-8, set 4½-in, 2710 ft; B-2 Barker, rigging up; B-3 Barker, dk; 1 Lewis, 29-23-8, tested sw, to abn 2820 ft; 1 L. B. Miller, 17-23-8, dr 110 ft. Steel & Sandlin's No. 1 Wise, 15-23-6, set 8-in, 1640 ft. Smitherman & McDonald's Nos. 2 Goree, 27-23-8, dk; 1 Hudson, 17-23-8, dr 2530 ft; 2 and 3 Hudson, dks. G. W. Stough's No. 1 Warren, 7-22-7, sd.

Tarver & Murphy's No. 2 L. F. Aiken, 27-23-8, dr 2460 ft. Tarver Oil Co.'s No. 2 Orr, 27-23-8, to pump 2800 ft.

Walker Con. Pet. Co.'s No. 1 McDonald, 19-23-8, dr 350 ft. Western Oil Fields Corp.'s No. 1 Lewis, 28-23-8, set 6-in, 2770 ft; 2 Lewis, dk. Wideman et al's No. 1 Shaw, 18-23-8, sd; 3 Hunt, 16-23-8, set 6-in, 2730 ft.

Zeigin et al's No. 1 Williamson, 28-23-8, arranging to dr in with cable tools, 2700 ft; 4 Williamson, dr 1560 ft; 5 Williamson, set 6-in, 2710 ft; 2 Braselton, 27-23-8, lcn.

CADDO COMPLETIONS

Standard Oil Co.'s No. 166 Stiles, 21-21-16, salt water, cas left in hole, 3265 ft.

Texas Co.'s No. 30 Caddo M. L. Co., 23-21-15, wo, pumping 35 bbls, 2860 ft; B-9 Noel, 14-21-15, wo, 400 bbls, 2375 ft.

CADDO DRILLING REPORT

Ackerman Oil Co.'s No. 6 Caddo L-B, 8-20-15, dk. Adamson Oil Co.'s No. 6 Muslow, 4-20-15, dk. Ala Pet. Co.'s No. 1 Barlow, 5-21-15, dr 2750 ft. Allied Oil Co.'s No. 13 Lynn, 12-21-15, sd. Amerada Pet. Co.'s No. 1 Jolly, dr 725 ft. Arkansas Nat. Gas Co.'s Nos. 189 Ardis & Lay, 2-21-15, will abn, 3260 ft; 193 Ardis & Lay, 1-21-15, rig moved, dk; 197 Gayle, 25-16-12, dk.

Bailey et al's No. 1 Bailey, 20-22-15, to pump, 1040 ft. Baird et al's No. 1 Baird, 22-20-15, to pump, 2212 ft. Berry et al's No. 1 Glassel, 10-20-15, dk.

Caddo Central Oil Co.'s No. 6 Noel, 25-21-15, rigging up to work over.

Dixie Oil Co.'s No. B-1 Noel, 24-21-15, pulled liner and casing to ream down; 24 Robertshaw, 14-21-15, set 4½-in 2780 ft; 40 Robertshaw, dk.

Emerald Oil Co.'s No. 2 Gamm, 26-21-15, dk. Empire Realty Co.'s No. 2 Central Prod. Co., 36-21-16, dk.

Flynn et al's No. 1 Spearman, 18-23-15, to resume dr. Fortuna Oil Co.'s Nos. 5 Robertshaw, 23-21-15, rigging up to deepen; 10 Robertshaw, testing 2680 ft; 13 Robertshaw, waiting for standard rig to drill in at 2540 ft.

Gantt & Pierce's No. 1 Barr, 30-22-15, to pump, 1061 ft. Gulf Ref. Co. of Louisiana's No. 213 Ferry Lake, 20-2-16, set 6-in, 2020 ft; 214 Ferry Lake, rigging up; 13 C. W. Lane, 13-21-15, set 10-in 232 ft; 1 Page et al, 18-17-15, set 4½-in, 2830 ft, total depth 2900 ft; 6 E. Tyson, 14-21-15, dr plug, 2700 ft.

Hall et al's No. 1 Wells, 15-21-15, sd. Hudson Oil Co.'s No. 1 Jefferson, 26-21-15, dk. Hamp Ivan Trustee's No. 1 Ramft, 33-22-15, sd. Integrity Oil Co.'s No. 1 Haveland, 4-15-13, dr 1620 ft.

La-Cons O. & R. Co.'s No. 16 Peak, 22-22-15, dk; 17 Peak, rigging up. La-Mutual Oil Co.'s No. 5 Heilperin, 26-21-15, dk.

Midcaddo Oil Co.'s No. 2 Boyter, 11-21-16, testing 2300 ft. Muslow Oil Co.'s No. 2 Muslow, 9-20-15, tested sw, 2205 ft.

Old Settlers Oil Co.'s No. 1 Lynn 4-acre, 13-2-15, r 2370 ft; 13 Lynn 4-acre, dr 425 ft.

Sakaba Oil Co.'s No. 4 Liebman, 32-21-15, dk; 5 Liebman, dk. Service Oil Co.'s No. 1 Big Four, 4-20-15, to pump, 2180 ft; 2 Big Four, dk. Souther et al's No. 1 McLendon, 18-21-15, dk. Standard Oil Co.'s No. 167 Stiles, 27-21-16, dr 1865 ft. W. G. Strange O. & R. Co.'s No. 15 M. A. Dickson, 27-20-15, sd; 9 Youree, 26-20-15, to pump, 2303 ft. Sun Co.'s No. B-115 Bradford, 25-21-15, rigging up to wo; 132 Spell, 29-21-15, dk.

The Texas Co.'s No. 29 Caddo M. L. Co., 23-21-15, fsh 2510 ft; 32 Caddo M. L. Co., to reset cas, 2630 ft; 3 J. F. Herndon, 14-21-15, cemented back to shut off salt water at 2990 ft, testing 2950 ft; 6 J. F. Herndon, set cas 2550 ft; B-10 Noel, fsh.

Wenzel et al's No. 2 Wenzel, 4-21-16, sd. Woodbine Oil Co.'s No. 2 Glassell, 25-20-15, to pump, 2300 ft; 2 Herold, set 8-in 640 ft; 2 North, 21-20-14, set 8-in 840 ft; 1 Caldwell, 24-21-15, dk; 1 Robertshaw, 23-21-15, set cas 2470 ft; 3 Robertshaw, fsh 2540 ft; 15 Robertshaw, sd. Woodley et al's No. 3 Noel, 25-21-15, rigging up to wo.

BULL BAYOU DRILLING REPORT

De Soto Parish

Boone Oil Co.'s No. 2 Giauque, 5-11-11, sd.

Garrison Coal & Fuel Co.'s No. 1 Bland, 11-11-16, dk.

J. W. Hedenberg's No. 1 Gullett, 11-11-14, sd.

Kansas & Gulf Oil Co.'s Nos. 8 Harp, 25-12-11, dk; 10 Harp, 36-12-11, dk.

Lanier & Thomas' No. 1 Lanier Land Co., 5-11-11, rigging up. Le Fleure Oil Co.'s No. 1 Giauque, 8-11-11, dk.

Pilgrim Oil Co.'s No. 2 Ramsey, 34-13-16, fsh.

U. S. Drilling Corp.'s No. 2 Lizzie Kemp, 26-12-11, sd.

Red River Parish

Central Coast Oil Co.'s Nos. 4 and 5 Nelson, 6-12-10, dks. Conley Oil Co.'s No. 1 Wilson, sd.

Dominion Oil Co.'s No. 4 Nelson, 5-12-10,, sd.

Fortuna Oil Co.'s Nos. 8 Pugh-Polly, 7-12-10, bailing 2800 ft; 6 Pugh, 12-12-11, lcn; 7 Pugh, 7-12-10, dk.

Gulf Ref. Co.'s No. 18 Christopher, 16-13-10, dr 2020 ft.

Loggy Bayou Oil Co.'s No. 1 Welsh, 7-14-10, sd.

Texas Ranger Oil Co.'s Nos. 2 and 5 Robinson, 32-13-10, dks.

HOMER COMPLETION

National Development Co.'s No. 1 Featherstone, 20-21-7, salt water, abn, 1400 ft.

HOMER DRILLING REPORT

Claibourne-La Oil Co.'s No. 3 McClung, 29-21-7, set 6-in 1930 ft.

Gilliland Oil Co.'s Nos. E-7 Shaw, 25-21-18, dk; E-12 Shaw, dk; E-13 Shaw, dk.

Gulf Refining Co.'s No. B-6 King, 25-21-18, fsh, 1950 ft.

Orleans Ref. Co.'s No. 1 Fields, 22-19-15, sd.

Standard Oil Co.'s No. 50 Shaw-Palmer, 30-21-7, sd.

Swails Oil Co.'s No. 1 Fortson, 24-21-7, sd.

Trinity Oil Co.'s No. 1 Bullock, 2-20-7, dk.

Wichita Oil Co.'s No. 1 Thomas, 5-21-7, lcn.

Wonderfield Oil Corp.'s No. 3 Fetherstone, 2-21-7, sd.

Houston, Texas., Jan. 14.—Sam B. Bates, aged 41 years, died at the St. Joseph's Infirmary in Houston on January 2, after an illness of four weeks. He was well known and had many warm friends among the oil men. He came to the Batson oil field when it first opened and served there as a Texas Ranger and was later at Humble oil field in the same capacity and as deputy sheriff. Later, however, he entered the employ of the Producers Oil Company, and The Texas Company, and was sent to Tampico, Mexico, in 1912, where he leased land for the above named companies. At the time of his death he was employed by the South Texas National Bank of Houston. Deceased is survived by his widow, who lives at 2014½ Jackson street, Houston, and the following sisters and brothers: Miss Leonore Bates, teacher in the public schools of Houston; Miss Izora Bates and Mrs. Ed Morgan of San Antonio, Texas; L. H. Bates and B. A. Bates of Tampico, Mexico; and W. B. Bates of Seattle, Washington; and W. F. Bates, with The Prairie Pipe Line Company at Mexia, Texas. Interment was made at Sabinal, Texas, his childhood home.

SOUTHERN LOUISIANA PRODUCTION

Lake Charles, La., Jan. 17.—The average daily production of the South Louisiana fields for the past week was divided about as follows, the past and previous week's averages being given:

	Last Week	Prev. Week
Vinton	3,500	3,200
Evangeline	450	500
Edgerly	300	390
Anse La Butte	115	115

VINTON COMPLETION

Vinton Petroleum Co.'s No. 21 Gray, wo, pumping 150 bbls, 2260 ft.

VINTON DRILLING REPORT

Marrs-McLean's Nos. 4 Gray, wo, dr 1750 ft; 5 Gray, wo, dr 2800 ft; 1 Gray Snyd., dr 2000 ft.

Gulf Refg. Co.'s Nos. 25 Star-Vincent, dr 1950 ft; 49 G. & N. G., wo, set screen 2250 ft.

Vinton Petroleum Co.'s No. 23 Gray, wo, dr 2400 ft.

Texas Co.'s No. 15 Vincent, set screen 2300 ft.

EDGERLY DRILLING REPORT

Gray Oil Co.'s No. 7 Lillard, wo, to pump, 2880 ft.

Gulf Refg. Co.'s No. 37 Bright-Penn, dr 2795 ft.

ANSE LA BUTTE DRILLING REPORT

Gulf Refg. Co.'s No. 3 Martin, rigging up to wo.

Humble Oil & Refg. Co.'s No. 2 Bergeron, dr 2180 ft.

Trustee Oil Co.'s No. 2, sd.

Mid-Continent Oil and Gas Year Book Worth a Look

Tulsa, Okla., Jan. 17.—The first year-book to be issued by the Mid-Continent Oil and Gas Association is just off the press and compares favorably with other publications of a similar nature and intent. The book has been prepared under the supervision of Judge Harry H. Smith, general secretary of the association, who was assisted by Howard Bennette of Dallas, secretary of the Texas-Louisiana division; Isaac E. Jay, statistician, and Laurence T. Kersey.

The contents of the year-book comprise useful information regarding regulations and rulings affectings the producer and independent oil man and it also contains a resume of crude prices and other data of a practical nature. The book is replete with illustrations, maps and charts, which set off the editorial matter.

In the front of the year-book appears full-page photographs of William N. Davis of Bartlesville, Okla., president of the association; Frank Haskell of New York and formerly of Tulsa, first president of the organization; J. Edgar Pew of Dallas, first president of the general association after its reorganization in 1919, and Frank M. Breene of Tulsa, president of the Osage Oil and Gas Lessees Association.

REFINED AND CRUDE MARKET BAROMETER

Mid-Continet Refiners Expected Crude Drop and Missed Guess

TULSA, OKLA., Jan. 18.—Those refiners in this field who anticipated a downward readjustment in Mid-Continent crude by the close of last week, which they felt certain would follow after the last Pennsylvania decline, now are busy revising their price sheets to the trade and are beginning to feel easier in their boots even though they are not yet out of the woods. There is developing more and more a tendency in refined circles here to discountenance further price concessions to attract what scattered business may be picked up in the open market. While more tank wagon changes are looked for few definite commitments have been forthcoming as the result of inquiries for long time contracts.

Purchases the last week and inquiries for both immediate and time shipments have injected at least a temporary steadying influence in the market, which may later develop into a well defined movement to maintain higher price levels than those now obtaining. Gas oil shipments handled within the last week by Standard Oil companies relieved to some extent accumulations of that product, although the price at which the stuff is moving did not materially benefit current quotations. Several hundred cars purchased by the Standard of Indiana and the commencement of deliveries on the Standard of Kansas order placed some days ago has furnished some activity.

Natural gasoline manufacturers and a representative of the Shell Company of California played hide-and-seek Wednesday, Thursday and Friday of last week with the odds to the visitor from the West Coast, who left Tulsa for North Texas having closed for only a small amount of the stuff which he said he desired to buy in this territory. Purchases of less than 100 cars by the Atlantic Refining and the Sun Company did not relieve the suspension which the Shell inquiry brought on and both casinghead and absorption have entered the new week with their positions only slightly bettered, if any. There were reports of the Texas Company closing for a portion of it's 1922 requirements but definite information is lacking on this deal.

Navy gasoline and kerosene are holding up to last week's quotations with some difficulty while motor fuels of higher gravity have benefitted from the recent export movement and are as strong if not stronger than previous positions would indicate. A considerable quantity of the 64-66 variety is going abroad and virtually all of this is being taken from Oklahoma, North Texas and Louisiana refinery centers. Fuel oil touched new low levels the latter part of last week, rallied a bit when the market opened on Monday morning and then suffered a relapse which has carried this product back to the 75-80 cent range of prices.

Reports from rural districts in the Middle West and Southwest would indicate that the jobbing trade is continuing light with little prospect of any immediate improvement. The road oil business is improving in some localities, particularly in the corn belt east of the river, and the desire to close early contracts on this product has stimulated the demand beyond the usual requirements at this time of the year. Early deliveries on road oil are being insisted upon in many instances.

There has been no change for the better in the lubricating oil market. The Union Petroleum Company was after some lub stock for foreign destination some time ago, and the price at that time did not reflect prevailing crude quotations. Industrial activity within the next sixty days will do much to impart new life to this market. Refiners are getting set in preparation for that time.

The following quotations represent refinery prices in tank carlots at the beginning of this week, f. o. b. Group Three, Oklahoma, or freight adjusted; prices are in cents per gallon, except fuel oil:

Gasoline and Naphtha			
50-50	450 end point	11½	11¾
56-58	450 end point	12	12¼
56-58	437 end point (New Navy)	12½	12¾
58-60	437 end point (New Navy)	12¾	13
60-62	400 end point	14¾	15
64-66	370 end point	16¾	17
Natural Gasoline			
Grade A	72-76, under 375 end point	12¼	13
Grade B	76-80, 375 end point	12	12¼
Grade D	80-84, 330 end point	11	11¾
Grade E	84-87, 330 end point	11	11½
Grade 1	60-62, 450 e. p. (motor blend)	11¾	12
Grade 2	62-66, 450 e. p. (motor blend)	11¾	12¼
Grade 3	66-70, 450 e. p. (motor blend)	11¾	12¼
Neutral Oils			
100 Vis.	@ 100, No. 2	5¼	5½
100 Vis.	@ 100, No. 3	5	5½
150 Vis.	@ 100, No. 4	8¾	9
200 Vis.	@ 100, No. 3	11¾	12
200 Vis.	@ 100, No. 4	11½	12
200 Vis.	@ 100, No. 5	11	11½
240 Vis.	@ 100, No. 6	15	15¼
280 Vis.	@ 100, No. 6	16¾	17¼
Burning Oils			
41-43	Kerosene	3⅜	3⅝
42-43	Kerosene	3½	3¾
38-40	Distillate	2¾	3
45-47	Distillate, 490-510 end point	5¼	5½
46-48	Distillate, 500 end point	6½	6¾
Wax			
124-126	White Crude Scale	2	2¼
Fuel Oils			
32-36	Gas Oil (gallons)	2¼	2⅜
24-26	Fuel Oil (barrels)	$ .75	$ .80

AVERAGE DAILY PRODUCTION FOR ALL UNITED STATES FIELDS
(Stated in Barrels)

This table is carried each week by The OIL WEEKLY, and shows daily production average for each state or section. Figures for Texas, Oklahoma, Kansas, Louisiana, Wyoming, Montana and Colorado are compiled weekly by The OIL WEEKLY, while estimates for the Eastern States and California are furnished by the American Petroleum Institute.

Week Ending—	West Texas	North Texas	Texas Coastal	Total Texas	Kansas	Oklahoma	Louisiana	Eastern States	Wyoming-Montana	California	Arkansas	U. S. Total
January 1	146,055	73,803	102,460	322,320	86,000	310,300	86,725	119,800	51,430	312,000		1,288,575
February 5 ...	133,341	74,285	117,946	325,572	83,750	307,200	92,300	121,000	54,030	325,000		1,308,852
March 5	130,280	81,250	112,575	324,105	83,300	304,600	77,670	120,000	59,428	331,000		1,300,103
April 2	134,056	81,370	114,395	329,821	86,150	289,400	79,400	121,000	58,000	327,000		1,290,771
May 7	123,430	77,150	108,465	309,045	104,200	296,900	74,515	129,500	58,200	339,000		1,311,360
June 4	125,185	79,580	107,975	312,740	105,700	301,300	76,100	126,000	63,000	338,000	24,000	1,346,840
July 2	105,500	78,965	86,870	271,335	109,500	304,300	76,480	124,000	66,000	336,000	40,000	1,327,615
August 6	101,755	75,835	96,945	274,535	105,300	310,600	70,335	120,500	42,425	336,500	71,000	1,331,195
Sept. 3	92,730	72,995	115,575	281,300	97,500	309,300	68,665	114,500	45,200	330,000	57,110	1,303,575
Oct. 1	84,485	69,540	89,310	243,335	96,200	311,560	68,185	121,000	49,600	220,000*	46,200	1,156,080
Nov. 5	106,135	68,420	108,650	283,205	96,200	313,400	67,190	119,000	46,400	220,000	44,225	1,189,620
Dec. 3	196,000	65,745	111,020	372,765	92,350	313,550	79,730	115,000	60,975	305,000	44,220	1,383,590
Jan. 7	199,220	66,410	108,145	373,775	88,050	311,850	94,475	115,500	59,625	320,000	43,530	1,406,805
Jan. 14	236,675	63,780	108,725	409,180	87,850	311,250	103,225	115,000	53,200	325,000	39,310	1,444,015

*Strike started.

Tank Wagon And Service Station Market Throughout United States

January 19, 1922

	Kero-sene	Gasoline T.W.	Gasoline S.S.
***ARIZONA—**			
Douglas	22	25.5	28.5
Phoenix	21	26.5	28.5
ALABAMA—			
Birmingham	14	23	25
Mobile	12.5	20	22
Montgomery	14.5	22	24
***ARKANSAS—**			
Fort Smith	12	21	24
Little Rock	13	20	23
Pine Bluff	14	22	25
CALIFORNIA—			
Los Angeles	14.5	21	23
Fresno	17	21.5	23.5
San Francisco	14.5	21	23
COLORADO—			
Denver	15	21	23
Common Points	15	22	24
CONNECTICUT—			
Hartford	16	26	29
New Haven	16	26	29
DELAWARE—			
Dover	14	23	26
Wilmington	14	23	26
DISTRICT OF COLUMBIA—			
Washington	12	22	24
***FLORIDA—**			
Jacksonville	12	22	24
Miami	15	25	27
Pensacola	12.5	22	24
Tallahassee	15.5	25	27
Tampa	12	22	24
***GEORGIA—**			
Atlanta	14	24	26
Augusta	14	23	25
Macon	14	23	25
Savannah	12	21	23
IDAHO—			
Boise	20	26.5	28.5
INDIANA—			
Evansville	12	20.6	21.6
Indianapolis	12.2	20.8	21.8
Fort Wayne	12.4	20	22
ILLINOIS—			
Chicago	11.5	19.5	21.5
East St. Louis	11.1	18.45	20.7
IOWA—			
Des Moines	12.4	21.1	22.1
Keokuk	12.1	21.1	22.1
Sioux City	12.4	21.1	22.1
***KENTUCKY—**			
Covington	13.5	23	25
Louisville	12	22	24
Lexington	12	23	25
KANSAS—			
Topeka	11.1	19.1	20.1
Wichita	11	19	20

	Kero-sene	Gasoline T.W.	Gasoline S.S.
LOUISIANA—			
Baton Rouge	10.5	18.5	21.5
New Orleans	10	19.5	22.5
Shreveport	12	20	23
MARYLAND—			
Annapolis	12.5	23	25
Baltimore	11.5	22	24
MASSACHUSETTS—			
Boston	15	26	28
Springfield	14	26	29
Worcester	14	26	29
MINNESOTA—			
Minneapolis	13	20.7	21.7
Pipestone	12.9	20.7	21.7
MISSISSIPPI—			
Clarksdale	12.5	21.5	23.5
Jackson	12.5	21.5	23.5
Natchez	12.5	21	23
Vicksburg	12.5	21	23
MISSOURI—			
St. Louis	11.2	18.9	21.2
Kansas City	10.5	18.2	19.2
MICHIGAN—			
Battle Creek	12.2	20.9	21.9
Bay City	12.5	21.3	22.5
Detroit	12.5	21.2	22.2
Grand Rapids	12.4	21.1	22.1
***MONTANA—**			
Butte	18.5	26.5	28.5
Billings	16.5	24.5	26.5
Helena	18.5	26.5	28.5
NEVADA—			
Reno	18.5	25	27
NEW JERSEY—			
Atlantic City	12	24	26
Newark	12	24	26
Camden	12	23	25
NEW YORK—			
New York City	14	26	28
Buffalo	15	25	27
NEBRASKA—			
Omaha	12.5	20	22
NORTH CAROLINA—			
Charlotte	13	22.5	24.5
Hickory	11.5	23	25
Mt. Airy	13.5	23	25
Salisbury	13.5	23	25
NORTH DAKOTA—			
Bismark	16.3	26.1	27.1
Fargo	14.7	24.5	25.5
Grand Forks	15	24.8	25.8
Minot	17	26.8	27.8
***NEW MEXICO—**			
Albuquerque	17	26.5	28.5
Santa Fe	17.5	27	29
OHIO—			
All points	14	22	23

	Kero-sene	Gasoline T.W.	Gasoline S.S.
OKLAHOMA—			
Muskogee	12	20	23
Oklahoma City	10	18	21
Tulsa	11	18	21
Woodward	12	20	23
Bartlesville	10.4	18.5	19.5
†OREGON—			
Portland	15.5	24	26
PENNSYLVANIA—			
Pittsburgh	14	23	26
Philadelphia	14	23	26
RHODE ISLAND—			
Providence	14	26	29
SOUTH CAROLINA—			
Charleston	11	19.5	21.5
Columbia	13	21.5	23.5
Spartanburg	13.5	22	24
SOUTH DAKOTA—			
Aberdeen	13.5	23.5	24.5
Sioux Falls	12.9	21.9	22.9
TENNESSEE—			
Chattanooga	14.5	22	25
Knoxville	15	22.5	24.5
Memphis	12.5	20.5	23.5
Nashville	12	21	24
TEXAS—			
Amarillo	14	19	22
Dallas	13	14	18
El Paso	14	21	24
Fort Worth	10	14	20
Houston	13	19	23
San Antonio	13	17	20
Wichita Falls	10	15	18
UTAH—			
Ogden	17.5	25.5	26.5
Salt Lake City	17.5	25.5	26.5
VIRGINIA—			
Danville	13.5	22	24
Norfolk	12	22	24
Petersburg	12.5	22	24
Roanoke	14	23	25
Richmond	12	22	24
WEST VIRGINIA—			
Charleston	13	23	25
Keyser	12.5	23	25
Parkersburg	11.5	21.5	23.5
Wheeling	13	22	24
WISCONSIN—			
La Crosee	13.1	22	23
Milwaukee	12	20.9	21.9
Madison	12.2	21.1	22.1
WYOMING—			
Casper	12.5	17.5	19.5
Cheyenne	14	20	21
Sheridan	17	23.5	25.5

At Fort Worth—The Gulf Refining Company cut gasoline prices two and one-half cents at Fort Worth, January 13.. Other companies followed. This cut is the result of a local situation—really one touching most of the North Texas points.

***Includes one cent excise tax assessed by the state and paid by the oil companies.**
†Includes two cent tax.

No Buying At Chicago With Snows in Middle West

Chicago, Ill., Jan. 16.—Heavy snows through large areas of the Middle West have added their influence towards weakening the oil market here, during the past week. Localities in Wisconsin report more snow on the ground than has been known in 20 years past, with bob sleds the only practical vehicles to get about in. This condition is not true of Chicago proper, where there has been less snow so far this winter than is usually experienced.

Mid-Continent prices, as a whole, are standing up better than are Pennsylvania, though both show some recessions. Pennsylvania naphthas, neutrals, cylinder stocks, burning oils, and fuel oil, all show signs of weakening. Fuel oil is quoted at 4⅜, instead of 4¾. In the motor fuel department, a few Mid-Continent products are quoted slightly lower. No weakness is shown elsewhere.

With no cuts in Mid-Continent crude announced to date, the opinion is beginning to prevail here that there will be no cut. Sellers here still consider the market's present weakness temporary, and are looking forward to early improvement.

Standard of Indiana has announced quite a number of adjustments in tank wagon prices, at various points, due to changes in freight rates. The reduction averages from one-tenth to three-tenths of a cent.

A few fluctuations are to be noted in animal and vegetable oils used by refiners. Naval stores, particularly rosins and turpentine, show some weakness.

Refined Markets

(Prices, January 16, 1922.)

GASOLINE AND NAPHTHAS

Pennsylvania

54 Naphtha	14½
56 Naphtha	16
58 Naphtha	16½
60 straight-run gasoline	17¼
62 Straight-run gasoline	19
64 Straight-run gasoline	20½
68 Straight-run gasoline	24
58-60 Blend, 450 end point	16
60-62 Blend, 450 end point	16
62-64 Blend, 450 end point	16
66-68 Blend, 440 end point	16
60-70 Blend, 440 end point	16
68-70 Blend, 420 end point	16

Chicago

Current quotations on Chicago market f. o. b. refinery

50-52 450 end point	11
56-58 450 end point	12¾
58-60 430-440 end point	13¼
60-62 400 end point	15¼
62-64 375 end point	17
64-66 365 end point	17½
80-84 Raw Casinghead	11¼
68-70 Blend, 430-435 end point	14
66-68 Blend, 450 end point	14
60-62 Blend, 450 end point	13
58-60 Blend, 440-450 end point	13
74-76 Absorption gasoline	15

NEUTRAL OILS

Pennsylvania

200 Visc. No. 3 Assoc. Filt.	19½
180 Visc. No. 3 Assoc. Filt	17
150 Visc. Assoc. Filt	14½

Chicago

Current quotations on Chicago market f. o. b. refinery
Viscosity test 100.

100 Visc. No. 2 Color	6
200 Visc. No. 3 Color	13
160 Visc. No. 4 Color	11½
200 Visc. No. 4 Color	13
200 Visc. No. 5 Color	13½

FUEL OIL

Pennsylvania

36-40 Fuel Oil	4⅜

Chicago

Current quotations on Chicago market f. o. b. refinery

32-36 Gas Oil (gal.)	.02¾
24-26 Fuel Oil (bbl.)	0.85

CYLINDER STOCKS

Pennsylvania

600 Steam Refined	11
650 Steam Refined	15
635 Steam Refined	14
600 Flash	18
600 Amber Filtered	16
600 Medium Filtered (D)	23
Cold Test Stocks (bright filt.)	38
Cold Test Stocks (dark filt.)	37

Chicago

Current quotations on Chicago market f. o. b. refinery

600 Steam Refined (bright green)	08½
600 Steam Refined (dark green)	.05

Refined Wax f. o. b. Chicago

118-120 fully refined	2.80
122-124 fully refined	2.90
125-127 fully refined	3.20
128-130 fully refined	3.40
130-132 fully refined	3.75
133-135 fully refined	4.10
135-137 fully refined	4.50
138-140 fully refined	5.00

BURNING OILS

Pennsylvania

45 Water White	6¾
46 Water White	7½
47 Water White	7¾
300 Burning Oil	7¾

Chicago

Current quotations on Chicago market f. o. b. refinery

42-43	4
44-45	7
42-43 Distillate	3½

WAX

Pennsylvania

122-124 White Crude Scale Wax, N. Y. lb	2¼
124-126 White Crude Scale Wax, N. Y. lb	2½

Chicago
(F. O. B. refinery, group 3.)

122-124 White Crude Scale Wax	2¼
124-136 White Crude Scale Wax	2½

Gasoline Export Business Shows Improvement; Cargo to England

NEW YORK, N. Y., Jan. 17.—Gasoline, in bulk, delivered New York, is weak. While some factors still ask as high as 18 cents, business in New Navy can be done at 17½ cents. Low grade gasoline is available at 17 cents per gallon. The tank wagon market is held at 26 cents but there are many observers who look for a substantial cut owing to the wide differential between the tank wagon market and the bulk price.

Export business in gasoline has improved slightly, one cargo of some 8000 tons having been sold. Details were withheld, although it is known that the gasoline is going to England.

Trade in kerosene is still very sluggish and talk of reductions is becoming more widespread although no revisions have come to light. The bulk delivered price is largely nominal and a matter of negotiation. Stocks are of large proportions. Export business is very disappointing although occasionally a large export inquiry comes to light.

The closing of the contract between the shipping board and the Vacuum Oil Company for the transportation of one million cases of gasoline to the Levant and neighboring territories created quite a little interest but this oil it is reported is chiefly on consignment.

Lubricating oils are coming in for more attention. Big buyers are inquiring more freely for cylinder 600 SR, which has been offered at as low as 18¼ cents in barrels, New York. The fact that there have been no radical cuts in lubricants regardless of the recent slashing in crude, has improved sentiment in the trade and smaller sellers are less panicky. Spindle oil are quiet and rather soft. For 175 viscosity at 100 degrees, the price asked, in barrels in New York, is 21 cents. Waxes are coming in for a better demand with domestic buyers showing more interest in future requirements. Fully refined 118-22 A M P is held at 3¼ cents and 138-140 A M P at 6½ cents. Yellow crude scale can be had at 2⅜ cents for 124-126 A M P. White crude scale 124-126 is held at 2¼ cents.

Bunker oil is sluggish and weak. No new features are reported but the f. a. s. New York price of $1.25 per barrel is by no means firm and further downward readjustments are expected. Gas oil is still nominal and dull at 6½ cents per gallon New York.

Petrolatums are quiet and devoid of new feature. Demand is chiefly for snow white which is offered around quite freely at 12½ cents. Medicinal oils are quiet and featureless. Prices are largely nominal. For 880-885 specific gravity the asking price is $1.50 per gallon.

Posted Price at Mexia Up 25 Cents—Orange Off 25 Cents

Houston, Texas, Jan. 19.—Effective January 14, the Humble Pipe Line Company raised the price of Mexia crude 25 cents, making the posted price $1.25 a barrel. This raise was met by The Texas Company and the Magnolia Petroleum Company, effective January 16.

Due to the fact that all the oil it is handling at Orange is going into earthen storage, the Humble Oil & Refining Company has reduced the price of Orange (Texas) crude 25 cents, effective January 16. This brings the price on Orange crude down to $1.00 per barrel.

In announcing the cut officials of the company stressed the statement that the cut was due to losses it is sustaining because it is forced to store the oil at this time in earthen storage. The company contemplates building steel storage at Orange in the near future.

Up to Thursday morning The Texas Company had not changed its posted price of $1.25 at Orange, but on January 18 the Gulf Pipe Line Company started posting Orange and fixed the price at $1.

CHARLES FOX DEAD

Los Angeles, Calif., Jan. 17.—Charles P. Fox, publisher of the California Oil World, died January 16 in Bakersfield after an illness of two years.

Sunshine State
Oil and Refining Company

Manufacturers and Distributors

Gasoline
Naphtha
Kerosene

Distillates
Fuel Oil
and
Gas Oil

Offices: 1019-1025 American National Bank Building
Wichita Falls, Texas

Crude Oil Prices

January 14.—Humble Pipe Line Company raised Mexia 25 cents to $1.25.

January 16.—Magnolia and Texas Company met raise at Mexia. Humble Pipe Line Company cut Orange crude 25 cents, making posted price $1.

January 18.—Gulf Pipe Line Company posted Orange crude for first time, fixing price at $1. Texas Company did not meet Orange cut.

	Jan. 18, 1922	Jan. 15, 1921
EASTERN STATES		
Cabell	$2.11	$4.46
Pennsylvania	3.25	6.10
Ragland	1.00	2.60
Corning	1.90	4.00
North Lima	2.48	3.73
South Lima	2.48	3.73
Wooster	2.70	4.05
Somerset light	2.15	4.00
Somerset heavy	1.90	...
Illinois	2.27	3.77
Indiana	2.28	3.63
Plymouth	1.65	3.48
Princeton	2.27	3.77
Waterloo	1.75	...
WYOMING		
Elk Basin	1.90	3.10
Grass Creek	1.90	3.10
Greybull	1.90	...
Torchlight	1.90	...
Rock Creek	1.50	2.75
Lance Creek	1.90	3.05
Mule Creek	1.30	2.05
Big Muddy	1.40	2.75
Salt Creek	1.40	...
Osage	1.90	...
Cat Creek (Montana)	1.90	...
Landers	87¼	...
CALIFORNIA (Crude Oil Prices at the Well)		
San Joaquin Valley and Whittier-Fullerton Fields.		
14 to 17-19 gravity	1.10	1.60
18 gravity	1.11	1.61
19 gravity	1.13	1.63
20 gravity	1.16	1.66
21 gravity	1.20	1.70
22 gravity	1.25	1.75
23 gravity	1.31	1.81
24 gravity	1.38	1.88
and for each increase in gravity of one (1) full degree above 26 gravity up to and inclusive of 34.9 gravity, ten (10) cents per barrel additional.		
CANADIAN CRUDE		
*Petrolia	2.88	4.13
*Oil Springs	2.95	...
*Plus 52½ cents bounty.		
ARKANSAS		
El Dorado 34 gravity and above	2.00	...
El Dorado below 34 gravity	1.75	...
OKLAHOMA		
Healdton	1.30	2.75
Cement, Beaver and Walters	1.30	2.85
All other fields	2.00	3.50
38 Gravity and above (Gulf only)	2.25	...
KANSAS		
All fields	2.00	3.50
KENTUCKY		
Western Kentucky (Indian Ref. Co.)	2.40	...
Western Kentucky, (Petroleum Ref.)	1.95	...
TEXAS		
North Texas (Except Corsicana)	2.25	3.50
Corsicana light	1.30	3.50
Corsicana heavy	95	1.75
Gulf Coast (Except Pierce Junction, Blue Ridge, Orange and Hull)	1.25	2.50
Orange	1.00	...
Pierce Junction, Grade A	1.25	...
Pierce Junction, Grade B	.80	...
Hull, Grade A	1.25	...
Hull Grade B	.80	...
Blue Ridge	80	...
Mexia	1.25	...
LOUISIANA		
Caddo 38 gravity and above	2.00	3.50
Caddo 35 to 37.9 gravity	1.90	3.40
Caddo 32 to 34.9 gravity	1.85	3.35
Caddo 32 gravity and below	1.10	2.50
Homer 36 gravity and above	2.00	3.25
Homer 34 to 35.9 gravity	1.90	...
Homer 32 to 34.9 gravity	1.85	...
Homer 32 gravity and below	1.50	...
Haynesville 34 gravity and above	1.85	3.15
Haynesville 33.9 and below	1.75	...
Bull Bayou 38 gravity and above	1.90	...
Bull Bayou 35 to 37.9 gravity	1.80	...
Bull Bayou 32 to 34.9 gravity	1.75	...
De Soto crude	2.00	3.40
Crichton crude	1.75	2.50
Jennings crude	1.25	2.50
Vinton	1.25	2.50
Edgerly crude	1.25	2.50

Stronger Market in North Texas Sagged Around Middle of Week

WICHITA FALLS, TEXAS, Jan. 17.—The stronger tone in the refined products market in the North Texas district late last week and through Monday of this week gave indications of sagging Tuesday, and many of the refiners are known to have shaded their prices in order to move a certain quantity of their stocks. The market tightened on the strength of the predicted drop in Mid-Continent crude oil prices failing to materialize, but the nonresponse of the buyers has served to dishearten the refiners, and they are now quoting gasolines and oils at prices almost the same as those asked for the same commodities when crude was $1 per barrel.

The Union Petroleum Company placed its regular weekly export order in the North Texas district early this week. The order called for 50 cars of new navy specification gasoline and 25 cars of 64-66 gravity, 375 end point gasoline, which was accepted in full by one refiner with 30-day delivery privileges.

The domestic demand for gasoline is not picking up as was predicted by many of the refiners and marketers, and inquiries being received are for quotations on small orders. New navy gasoline price is shaded about one-quarter of a cent under last week's figure, and could be had for 12½ to 13 cents per gallon f. o. b. shipping point Tuesday. Kerosene is also weaker, and some of the refiners are making special efforts to reduce their stocks at prices ranging from 2¾ to 3¼ cents.

Fuel oil is maintaining its price owing to the small quantity on hand in the North Texas district, and the owners are financially able to hold out over a longer period without making a turnover on their oil. Fuel was moving at 80 to 90 cents per barrel early this week as result of a few scattered orders from various sections of the State, and mining concerns in Arizona and New Mexico.

A fair range of prices on refined products in the North Texas district, f. o. b. shipping point, in tank car lots, follows:

Gasoline, SR, 56-58, 450 e.p.	12¼	12¾
Gasoline, SR, 58-60, 437 e.p.	12½	13
Gasoline, SR, 60-62, 400 e.p.	13½	14½
Gasoline, SR, 64-66, 375 e.p.	17	17½
Naphtha, 50-52, 450 e.p.	10	10¼
Nat. Gasoline (casinghead), 84-88	11	
Nat. Gasoline (absorption), 70-74	12	
Kerosene, WW, 41-43	3	3¼
Distillates, 36-38	2½	3
Gas oil, dark or straw, 32-36	2½	3
Fuel Oil (Fort Worth)	$1.00	$1.00
Fuel Oil (Wichita Falls)	80	90

Business Outlook Slightly Better in Gulf Coast

Houston, Texas, Jan. 18.—While quotations on some products from Coastal crude oils are slightly lower than last week, the business outlook for South Texas refineries is somewhat better. The new year has brought increased business and a larger increase in inquiries.

The decreases in quotations are 1 cent each on 150, 200 and 500 pale oils, and 500 red oil.

Another factor in the better turn of the market is the feeling that the price of crude oil will not be reduced in the Coastal section. Following cuts on Pennsylvania crude, the feeling among buyers was that Mid-Continent and Coastal crudes would be next in line. So far these have failed to come. Jobbers have come back into the market with inquiries and orders.

Fuel oil is still sluggish, although it is selling in some instances as high as $1.25 per barrel. Quotations on this product are nominal. Bunker oil at Texas ports can be had at $1.05.

Quotations for the mid-week, f. o. b. shipping point, were as follows:

Color	Viscosity @ 100 F.		Price Per Gal High	Low
—2	70	Pale Oil	5	4
2	100	Pale Oil	7	6
2½	150	Pale Oil	10	9
3	200	Pale Oil	12½	11
3½	300	Pale Oil	16½	15½
3¾	500	Pale Oil	20½	19
4	750	Pale Oil	30	29
5	200	Red Oil	11	10
5	300	Red Oil	15	14½
6	500	Red Oil	20	18
1½	100	Pale Oil Filtered	19	17½
1½	150	Pale Oil Filtered	23	18
2	200	Pale Oil Filtered	26½	25
2	300	Pale Oil Filtered	29	27½
2½	500	Pale Oil Filtered	30½	29
2½	750	Pale Oil Filtered	42½	40
		Zero black	5½	5
Gas Oil			3½	3
Fuel Oil (bbl.)			$1.20	$1.10

Mexia, Texas., Jan. 14.—The new Majestic Hotel at Mexia will open within the next week. The hotel will have sixty rooms and will be modern in every respect. This is welcome information to oil men stopping at Mexia as hotel facilities have been limited.

Oklahoma Oil Jobbers Oppose 1 Cent Road Tax

Oklahoma City, Okla., Jan. 16.—Going on record as vigorously opposing the imposition by the State Legislature of a 1-cent road tax on gasoline sales, members of the Oklahoma Oil Jobbers Association at their annual meeting here January 12 proceeded to the election of officers for the ensuing year and heard reports covering the activity of the association for the last twelve months. More than 60 oil jobbers from all sections of the State were in attendance.

The meeting was held in the Hutchins Hotel here and continued throughout the day. R. G. Cunningham of Miami, president of the Cunningham Oil Company, was elected president of the association succeeding D. L. Gilland of Tulsa, Oklahoma Producing and Refining Corporation. Mr. Cunningham also is one of the directors of Group Two of the National Petroleum Marketers Association, which was the outcome of the merger of the two independent oil associations in Chicago last October.

James T. Edwards of the Shaffer Oil and Refining Company of Oklahoma City was elected vice president and L. E. Hutchens of Enid, Good Will Oil Company, was re-elected secretary. The executive committee of the Oklahoma Oil Jobbers Association for the new year includes L. A. Warren of Ponca City, Marland Refining Company; R. C. Holt of Altus and C. E. Doty of Oklahoma City.

In the afternoon session Mr. Warren, who is branch sales manager of the Marland Refining Company, spoke on the maintenance and operation of filling stations and his talk was well received.

The question of the good road tax on gasoline sales in Oklahoma evoked considerable discussion among the jobbers which finally led to a vote to determine the action of the organization as a body representing the retail oil business in widely separated sections of the State. The vote indicated that fully two-thirds of the membership disapproved of the proposal which has been agitated among automobile owners and good roads enthusiasts as a means of building new highways and maintaining the present system of public roads.

The recent readjustment in the tank wagon market in Oklahoma, brought on by underselling practices on the part of some dealers, came in for a round-table discussion and trade ethics were reviewed so as to impress on all present the value of maintaining schedules established at retail stations over the State. Price-cutting in Oklahoma was severely condemned.

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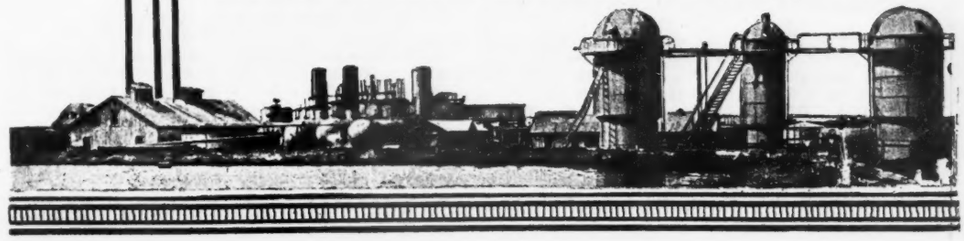

WILDCATS FROM ALL SECTIONS

Arkansas Wildcats

COMPLETION

Ashley County—Seidlitz et al's No. 1 Thompson, 36-16-8, salt water, abn 3000 ft.

ARKANSAS COUNTY—Ark. Oil Lease Dev. Co.'s No. 1 Griffith, sd. Gillett Oil & Gas Co.'s No. 1 Rose, 11-7-4, sd 2250 ft. L. P. Johnson et al's No. 1 Cleaner, 17-3-5, dr 240 ft.

BRADLEY COUNTY — Bainbridge et al's No. 1 Blankenship, 20-12-9, sd. Mann et al's No. 1 Southern, 26-12-11, dk.

CLARK COUNTY—Ark. Oil Co.'s No. 1 Barringer, 28-20-10, dr 2400 ft. W. C. Wilson's No. 1 Clark, 16-10-21, sd 2050 ft.

CLEVELAND COUNTY—Success Drilling Co.'s No. 1 Elliott, 34-8-10, sd.

COLUMBIA COUNTY—Columbia Oil & Gas Co.'s No. 1 Hall, 11-11-20, sd. Grand Prairie Oil Co.'s No. 1 Gantt, 14-17-22, dr 1425 ft. Guy Cox's No. Davis, 14-8-21, dr 1000 ft. Hercules Oil Synd.'s No. 1 Wise, 29-18-21, sd 1370 ft. Miller et al's No. 1 Brown, 10-17-20, dr 2000 ft. Pure Oil Co.'s No. Webber, 33-15-20, dr 1000 ft. Russell et al's No. 1 Wessle, 17-18-18, dr 2210 ft; 1 Flint, 3-20-20, rigged. G. W. Stough's No. 1 Brown, 28-18-20, sd 390 ft. Tate et al's No. 1 Booth, 34-16-9, dk.

DREW COUNTY—Bailey & Christian's No. 1 Neideringhaus, 24-13-7, rigged. Busey et al's No. 1 Richardson, 29-11-7, dr 2600 ft. Clark & Hunt's No. 1 Wise, 18-13-8, dk. Drew County Oil & Gas Co.'s No. 1 McCoy, 19-12-6, sd 1830 ft. Dun-Mar Pet. Co.'s No. 1 Hardy, 17-13-7, dr 1920 ft. Kentucky Oil Co.'s No. 1 Morgan, 31-13-7, dk. Wilmar Oil & Gas Co.'s No. 1 Montgomery, 26-12-8, fsh 2940 ft. Steinke Oil Co.'s No. 1 fee, 23-13-7, dk.

DALLAS COUNTY—Burns trustees' No. 1 Wisconsin Lbr. Co., 27-7-17, set 10-in, 1250 ft.

GRANT COUNTY—Brothers Oil Co.'s No. 2 Crawford, 16-4-13, sd 2240 ft. Harry Winters et al's No. 1 Kelly-Lamb, 25-6-15, fsh 2110 ft. McGee Tetter & English's No. 1 Cargile, 26-5-12, sd 90 ft.

GREEN COUNTY—Preston Oil & Gas Co.'s No. 1 Love Lady, 30-18-5, dr 1200 ft.

HEMPSTEAD COUNTY—Anderson et al's No. 1 Mason, 7-11-24, sd. Continental Oil Co.'s No. 1 Brown, 23-13-24, sd 510 ft. Ga-Ark Oil Synd.'s No. 1 Nitthell, 16-11-24, sd 1850 ft. Yates et al's No. 1 Henry, 30-13-23, dr 2635 ft.

HOT SPRINGS COUNTY—Malvern Oil & Dev. Co.'s No. 1 J. K. Hall, 34-5-17, dr 1000 ft. Blayne Holcomb's No. 1 Delaney, 24-4-16, dr 700 ft. Lish et al's No. 1 Manning, 34-4-17, dr 610 ft.

JEFFERSON COUNTY—Ark. Oil Corp.'s No. 1 Phillips, 2-5-8, r 970 ft. Hall & Smith's No. 1 Nick's, 8-6-6, sd. Jefferson County Oil & Gas Co.'s No. 1 Nevens, 22-4-10, sd.

LAFAYETTE COUNTY—Wonderland Oil Corp.'s No. 1 Journey, 20-15-25, rigged.

LITTLE RIVER COUNTY—Brookshear et al's No. 1 Toole, 2-21-21, sd. Grote et al's No. 1 fee, 2-14-30, dr 1400 ft. Red River Valley Oil & Gas Co.'s No. 1 Toland-Taylor, 29-13-29, sd 1400 ft. Roberts et al's No. 1 Hall, 22-13-29, sd 1370 ft. Sullivan Oil Synd.'s No. 1 Ellis, 15-11-32, sd 2110 ft; 1 Ludlow, 32-11-32, sd 1990 ft; 2 Ludlow, 4-11-32, dr 2000 ft.

LONOKE COUNTY—Ark. Oil Corp.'s No. 1 Scroggins, 17-?-9, set 4½-inch 2840 ft.

MILLER COUNTY—Primero Oil Co.'s No. 1 Bedland, 2-16-28, dr 1680 ft. Welsh Oil & Gas Co.'s No. 1 Steed, 21-18-16, trying to pull cas to reset. Central Coast Oil Co.'s No. 1 Mann, 22-15-16, set 4½-inch 2840 ft.

NEVADA COUNTY—Brown et al's No. 1 Smith, 7-15-22, dk. Jarrett & Hoskin's No. 1 Johnson, 9-15-21, dr 2050 ft. Karnack Oil Co.'s No. 1 Luck, 16-13-21, sd. Shaw et al's No. 1 Russell, 36-13-23, sd 2600 ft.

OUACHITA COUNTY—Stephens Oil & Gas Co.'s Nos. 1 Brewer, 27-15-19, sd; 1 Davis, 23-15-19, sd. Southern Oil Co.'s No. 1 Patterson, 22-12-19, fsh 1230 ft. Straughan & Crawford's No. 1 Rex, 32-12-19, dk. Lumberman Oil Co.'s No. 1 Crutcher, dr 175 ft.

PIKE COUNTY—Pike County Oil & Gas Co.'s No. 1 Amity, 28-3-23, rigged up.

PULASKI COUNTY—Ark River Oil & Dev. Co.'s No. 1 J. L. Atkins, 32-2-11, dr 600 ft.

SEVIER COUNTY—Miller et al's No. 1 Coulter, 30-9-29, sd 2050 ft.

ST. FRANCIS COUNTY—Jennings Synd.'s No. 1 Whitted, 28-4-10, testing 2270 ft.

Louisiana Wildcats

COMPLETION

Natchitoches Parish—Tudor Oil Co.'s No. 2 Winn, salt water, abn 1630 ft.

ASSUMPTION PARISH—Pierre Parre Oil Co.'s No. 1 Simmineaux, 36-12-12, sd.

BEAUREGARD PARISH—H. M. T. Oil Co.'s No. 1 Holloman, 7-3-10, sd. Southwest Louisiana Dev. Co.'s No. 1 Lassiter, 1-4-12, sd 1080 ft.

BIENVILLE PARISH—Hodge-Hunt's No. 1, 16-15-4, sd 1620 ft. Lakeside Oil Co.'s No. 3 State, 1-16-10, sd 2540 ft. Planters Oil & Mineral Co.'s No. 1 Enloe, 24-14-6, sd 2940 ft. Texas Interstate Oil Co.'s Nos. 1 Atkins, 6-17-5, dk; 1 Beard, 33-18-5, dk; 1 Caskey, 4-18-5, sd 2806 ft; 2 Caskey, 8-18-5, dk; 1 James, 8-18-5, sd 1000 ft.

CAMERON PARISH—Cameron Oil Co.'s No. 1 Little, 28-12-10, sd. Gulf Gardner & Noble's Nos. 1 Elender, 28-10-12, dk; 1 Starks, 2-15-15, dr 3200 ft.

CATAHOULA PARISH — Rowe-O'Donnell's No. 1 Cleisen, 5-10-8, dk. Green et al's No. 1 McMillan, 22-8-6E, sd.

EVANGELINE PARISH — Amerada-Invincible Oil Co.'s No. 1 Crowell & Spencer, 26-3-1, trying to re-cement cas, 3705 ft.

FRANKLIN PARISH—Burrell Trustee's No. 1 Gilbert, 17-12-8, dk.

IBERIA PARISH—Collery et al's No. 1 McIllhenny 19-13-6E, dr 730 ft. Guidros & Billeaud's No. 1 Bolliver, 12-7, sd.

JACKSON PARISH—Jackson-Lincoln Oil Co.'s No. 1 Kavanaugh, 34-17-3, sd 1810 ft.

JEFF DAVIS PARISH—F. I. Getty's No. 1 Todd, 27-9-5, sd 3300 ft.

MOREHOUSE PARISH—Imperial Pet. Co.'s No. 3 Allison, 40-20-5, sd 1700 ft. Morris Trustee's No. 4 Crossett Lbr. Co., 8-23-6, dr 3055 ft; 6Crossett, 20-22-5, rigging up; 7 Crossett, dk; 2 Tensas, 22-26-7E, set 6-inch 2150 ft. Ridge & McLaughlin's No. 2, 29-23-8E, rigging up. Transcontinental Oil Co.'s No. 1 Wyman Lumber Co., 1-18-5, sd 2715 ft. United Carbon Co.'s No. 1 Harris, 17-20-5, dr 350 ft.

NATCHITOCHES PARISH—Planters O. & M. Co.'s No. 1 Ayers, 3-13-7, sd 3710 ft. Page et al's No. 1 Brown, 6-8-9, rigging up.

OUACHITA PARISH—Atlas Oil Co.'s No. 1 West Va., 34-19-5, dr 2170 ft. Brunner & Julian's No. 1 Miller, 19-18-15, dk. Bell Oil Co.'s Nos. 1 Brooks, 35-17-3, dk; 1 Thomas, 24-18-4, dk. Brunnett & Julian's No. 1 Miller, 19-18-14, rigging up. Hall Oil Co.'s No. 1 Richardson, 25-18-1E, dk. Hansen Oil Co.'s No. 1 Hansen, 17-15-4, r 2900 ft. Morris & Quigg's No. 2 Grayling, 22-16-3E, sd. Southern Carbon Co.'s Nos. 5 Fee, 7-19-5, dr 1975 ft; 6 Fee, dr 60 ft; 7 Fee, lcn. Unit Leasing Co.'s No. 1 Daniels & Barnes, 2-21-7, dk.

RAPIDES PARISH—Alexanderia Oil & Gas Co.'s No. 1 Archinaud, 23N-2W, dr 3010 ft.

RICHLAND PARISH—Mangham Oil & Gas Co.'s No. 1 Baker, 4-15-7E, sd 2840 ft. Sebring Oil Co.'s No. 1 Richardson, 5-18-10, sd 1870 ft.

SABINE PARISH—Gay et al's No. 2 Bowman Hicks, 15-7-12, set 8-inch 375 ft. Mississippi Oil & Gas Co.'s No. 1 Giauque, 10-7-13, sd 600 ft.

ST. LANDRY PARISH—Opelousas Dev. Co.'s No. 1 Thomas, 138-6-4, sd 2510 ft.

ST. MARYS PARISH—Peters & Reed's No. 2 Avoca Island, 31-16-13, sidetracking, 3100 ft.

TERREBONNE PARISH—Terrebonne and Southern Dev. Co.'s No. 1 Bayou Cane Land, 67-16-16, sd 200 ft. Terrebonne Gas Co.'s No. 1 Hope, 8-18-18, dr 2350 ft. Foundation Oil Co.'s Nos. 5 Lirete, 33-19-19, sd; 1 Smith, 23-19-19, set 10-inch 390 ft.

UNION PARISH—Crawford & Sebastian's No. 1 Ramsey, 29-21-1E, dr 1860 ft. Homer-El Dorado Oil Co.'s No. 1 Clark, 17-23-1E, sd 2990 ft.

WEBSTER PARISH—C. E. Brewer et al's No. 1 Giles, 12-23-11, set 10-inch 510 ft. W. M. Burkhalter's No. 1 Fee, 29-19-8, to resume dr. Carmody & Lide's No. 1 Shaw, 24-23-9, set 6-inch 2680 ft. A. J. Ducote et al's No. 1 Woodward, 30-18-8, sd 1790 ft. Fullilove & Wadley's No. 1 Martin, 12-22-10, rigging up. Goldman Synd.'s No. 1 Spencer, 5-21-9, set 8-inch 1950 ft. Lloyd Harris et al's No. 1 Pine Woods Lumber Co., 34-23-11, r 2530 ft. La-Miss Oil Co.'s No. 1 Denman, 1-22-11, dr 1010 ft. Union Railway Oil Men's Assn.'s No. 1 Sikes, 34-22-9, sd. Red Rock Oil & Gas Co.'s No. 2 Haynes, 10-23-9, dr 2400 ft. Louisiana Oil & Ref. Co.'s No. A-2 Gleason, 18-22-9, dr 1920 ft. V. K. F. Drilling Co.'s No. 1 Young, 32-22-10, rigging up. Munroe Synd.'s No. 1 Adkins, 25-21-11, set 12½-inch 250 ft.

WEST FELICIANA PARISH — Tunica-Homer Oil Co.'s No. 1 McLean, 45-23-2E, standing 2490 ft.

WINN PARISH—Gulf Ref. Co.'s No. 1 Southern Mineral Co., 30-11-3, dr 1860 ft; 1 L. & A. Ry., 19-10-4, dr 3790 ft. William Cady's No. 1 Edenborn, 31-10-3W, sd; 3 Edenborn, 26-9-4, dr 2810 ft.

Central West Texas Wildcats

COMPLETION

Palo Pinto County—Prairie Oil & Gas Co.'s No. 3 S. J. Stuart, dry and abn 1865 ft.

DALLAS COUNTY—City of Garland's No. 1 Fee, dr 1835 ft.

JOHNSON COUNTY—Johnson County Oil & Dev. Co.'s No. 1 Rhodes, sd 3480 ft.

PALO PINTO COUNTY—Bailey & Nicholson's No. 1 ——, rig. Dalton Oil Co.'s No. 1 R. S. Dalton, sd 3810 ft. Dehart & McKay's No. 1 Seaman, spudded and sd. Delta Oil & Ref. Co.'s No. 1 C. F. Caudill, fsh tools 3475 ft. Empire Oil & Gas Co.'s Nos. 3 R. A. Wheeler, spudded and sd; 2 Gilbert, sd 3575 ft; 3 Gill, rig. H. N. Harris et al's No. 1 G. N. Weldon, spudded and sd. Hart Oil Corp.'s No. 13-2 Hart, loc; 23-2 Hart, rig. A. A. Haubert et al's No. 1 Tipton, lcn. F. G. Johnson et al's No. 1 Howard, rig. Milton & Floyd et al's No. 1 Malry, timbers. Nash & Windfohr's No. 1 Eubanks, sd 305 ft. Nelson Oil Synd.'s No. 1 Reasoner, sd 3580 ft. O. R. Rochelle's No. 1 Fee, rig. A. T. Strong's Nos. 1 Moseley, sd 3725 yt; A-1 L. E. Seaman, putting on pump to test 3160 ft. Rufus G. Smith's No. 1 Seaman, hole full oil sd for gas and water 3160 ft. Sun Co.'s No. 1 Hart, timbers. Silver Rock Oil Assn.'s No. 1 Moseley, rig. Seaboard Oil & Gas Co.'s No. 1 W. L. Costello, rig. J. S. Thompson et al's No. 1 W. A. Beddo, sd 3815 ft. Texhoma Oil & Ref. Co.'s Nos. 1 Robinson-Collett, ur cas 3590 ft; 4 and 5 Robinson-Collett, lcns. D. A. Upham et al's Nos. 3 Belding, sd 3775 ft; 1 F. M. Watson, sd 3520 ft. D. A. Upham's No. 1 C. L. Walker, dr 900 ft. R. B. Whitesides' No. 2 A. B. Lane, dr 1300 ft.

PARKER COUNTY—Capital Pet. Co.'s No. 1 McFarland, sd 1500 ft. Crane Creek Oil & Gas Co.'s No. 1 P. E. Harwell, dr 1245 ft. Dittman-Thompson et al's No. 1 Fondren, rig. East Ext. Ranger Oil & Gas Co.'s No. 1 Reynolds, rig. Hale & McKnight's Nos. 1 Davis, making 15,000,000 cu ft gas sd 2265 ft; 1 Bradley, ur 970 ft. Hicks & Ganes' No. 1 Herring, ur 1010 ft. Jackson & Cathcart's No. 1 Emberlin, making 2,000,000 cu ft gas set cas 595 ft. L. B. McGarr et al's No. 1 Baxter, dr 3070 ft. Owens & Burkett's No. 1 Herrin, dr 840 ft.

ROCKWALL COUNTY—Gulf Coast Drilling Co.'s No. 1 Shook, dr 2535 ft.

TARRANT COUNTY—Fort Worth Oil Co.'s No. 1 J. W. Wray, ur 1660 ft.

Northeast Texas Wildcats

BOWIE COUNTY—Delaney Oil & Gas Co.'s No. 1 Bowie, sd 2290 ft. Gatex Oil Co.'s No. 1 Perkins, sd 1570 ft. Scott et al's No. 1 fee, sd 2195 ft.

CASS COUNTY — Carlson-Price Pet. Co.'s No. 2 Spears, sd 3300 ft.

HARRISON COUNTY—R. W. Hale et al's No. 1 Harris, dr 4030 ft. Snelling et al's No. 1 State, sd 2635 ft. Universal Pet. Co.'s No. 1 Bivens, sd 2810 ft.

MARION COUNTY—Lakeshore Oil Co.'s No. 1 Zach-

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ery, dr 1620 ft. Lucas Oil & Dev. Co.'s No. 1 Blocker, sd. Universal Pet. Co.'s Nos. 1 State, sd 2395 ft; 2 State, sd 345 ft.

MORRIS COUNTY—Davis & Younger's No. 1 McCormick, sd 2425 ft.

NACOGDOCHES COUNTY — Caro Synd.'s No. 1 Whiteman & Saner, sd 3370 ft. McCreary & Ramsey's No. 1 Strode, dr 2860 ft. J. F. Wolter's No. 1 Driver, fsh 470 ft.

PANOLA COUNTY—Bethany Oil & Gas Co.'s No. 208 Gulley, dr 1000 ft. Galloway et al's No. 1 Eden, dr 1969 ft. Humble Oil & Ref. Co.'s No. 1 Johnson, to abn 1990 ft. Industrial Gas Co.'s No. 1 Lowless, dr 1150 ft. Magnolia Pet. Co.'s No. 1 Greer, set 6-in 2600 ft. Texas Co.'s No. 1 T. W. Brumble, dk. Morris Trustee's No. 1 Lewis Werner, dr 1165 ft.

RED RIVER COUNTY—Choctaw Oil & Gas Co.'s No. 1 Scott, dr 2350 ft. Red River Oil & Gas Co.'s No. 1 Dinwiddle, reaming 1850 ft. Toronto-Texas Oil & Gas Co.'s No. 1 Coleman, sd 1465 ft.

SHELBY COUNTY—Cathcart-Texas Oil Co.'s No. 1 Holt, sd 2995 ft.

North Texas Wildcats

COMPLETION

Archer County—Burk-Archer Oil & Ref. Co.'s No. 1 Andrews, temp abn 1830 ft. Perkins et al's No. 1-B Haggard, 2 bbls 1603 ft. Riner & Bailey's No. 1 Netherton, dry and abn 1656 ft. Texhoma Oil & Ref. Co.'s No. 12 Gose, 80 bbls 1611 ft.

(NOTE—The drilling report below does not show wells that are shut down indefinitely.)

ARHER COUNTY——Ava. Dev. Co.'s No. 1 Culberson, dr 1364 ft. Ford et al's No. 1 Browning, dr 100 ft. Gamble Oil Co.'s No. 1 Reilly, sd 800 ft. Sun Co.'s No. 1 McCarty, sd 1975 ft. Swastika Oil Co.'s No. 1 Richardson, sd 1375 ft. Texhoma Oil & Ref. Co.'s No. 13 Gose, dk.

CLAY COUNTY—Champion Oil Co.'s No. 1 Hatfield, sd 1840 ft. Gurtin Oil & Gas Co.'s No. 1 Kranke, sd 3500 ft. Junior Oil Co.'s No. 2 Glasco, sd 1850 ft. J. F. Mertz's No. 1 Roddy, dr 1420 ft.

FOARD COUNTY—Plateau Oil Co.'s No. 1 Beverly, sd 2400 ft. Wright et al's No. 1 Simpson, sd 900 ft.

GRAYSON COUNTY—Peters Oil Co.'s No. 1 Butcher, dr 1110 ft. Preston Anticline Oil Co.'s No. 1 Munson, dr 2155 ft. Revere Oil & Gas Co.'s No. 1 Exstein, dr 2200 ft. Victory Pet. Co.'s No. 1 Anderson, sd 1160 ft.

HARDEMAN COUNTY—Mid-West Pet. Co.'s No. 1 Mulkey, dr 1940 ft. Ne-No-Shee Oil Co.'s No. 1 Stewart, sd 2615 ft. Sigler Oil Co.'s No. 1 Wheat, sd 2650 ft. Walker Oil Co.'s No. 1 Lance, sd 1700 ft.

HASKELL COUNTY—Glenn Oil Synd.'s No. 1 Reynolds, sd 1300 ft.

JACK COUNTY—Roxana Pet. Co.'s No. 1 Williams, testing sand 4485 ft. Silver Star Driling Corp.'s No. 1 Coker, dr 300 ft.

MONTAGUE COUNTY—Raymond Oil & Dev. Co.'s No. 1 Summerour, sd 1020 ft.

WICHITA COUNTY—Boaz et al's No. 1 G. Hund, dr 1400 ft. Cox Realization Co.'s No. 1 Fassett, sd 1940 ft. Pope et al's No. 2 Cooper, dr 1375 ft. Schow Pet. Co.'s No. 2 Parker, sd 1000 ft. Western Crude Oil Co.'s No. 1 Troutman, sd 1800 ft.

WILBARGER COUNTY—Burton et al's No. 1 Wharton, dr 1580 ft. King et al's No. 1 King, sd 920 ft. Pyramid-Royalty Co.'s No. 2 Wharton, cas trouble 1948 ft. Spencer et al's No. 1 Waggoner, sd 400 ft.

WISE COUNTY—Cliffwood Oil & Gas Co.'s No. 1 Stalcup, dr 710 ft. Flickenger et al's No. 1 Whatley, sd 3200 ft. Hale & Todd's No. 1 Hoyle, set cas 2975 ft. Keystone Pet. Co.'s No. 1 Askey, fsh 3258 ft. Wise-Commanche-Burk Oil Co.'s No. 1 Spann, dr 2665 ft.

Texas Panhandle Wildcats

(NOTE—The drilling report below does not show wells that are shut down indefinitely.)

CARSON COUNTY—Capital Pet. o.'s No. 1 Purvine, sd 3000 ft. Gulf Prod. Co.'s No. 1 Burnett, ur 2700 ft. Humble Oil & Ref. Co.'s No. 2 Burnett, dr 485 ft. Silk et al's No. 1 Burnett, dr 50 ft. The Texas Co.'s No. 1 Burnett, dr 50 ft.

CHILDRESS COUNTY—Burk et al's No. 1 Howell sd 1550 ft. Childress-Duluth Oil Co.'s No. 1 Clutts, sd 3900 ft. Webster Oil Co.'s No. 1 Smith, sd 2500 ft.

DONLEY COUNTY—Atlanta Oil & Dev. Co.'s No.

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1 Grogan, co 2150 ft. N. Y. Crane's No. 1 Bugbee, sd 3550 ft.

HALE COUNTY—Bledsoe & Son's No. 1 Richter, dr 2420 ft.

HALL COUNTY—Craola Oil Co.'s No. 1 Funston, sd 1080 ft. Home People's Oil Co.'s No. 1 Barnett, sd 1910 ft. Texas Virginia Oil Co.'s No. 1 Letts, sd 3265 ft. Watchorn Oil Co.'s No. 1 Lindley, dr 3300 ft.

HUTCHINSON COUNTY—Coble Haywood Synd.'s No. 1 Coble, dr 3500 ft. Gulf Prod. Co.'s No. 1 Dial, rigging up. McGee et al's No. 1 Smith-Coppers, dr 100 ft. Panhandle Ref. Co.'s No. 1 Whittenburg, lcn.

MOORE COUNTY—Shamrock Oil Co.'s No. 1 Sneed, set cas 3100 ft.

POTTER COUNTY—Montgomery et al's No. 1 Masterson, set cas 1650 ft.

WHEELER COUNTY—Knox Oil Co.'s No. 1 Ketchelhoffer, sd 1200 ft.

Coastal Wildcats

AUSTIN COUNTY—Texas Co.'s No. 1 Shaffner, dr 2400 ft. West Production Co.'s No. 1 Watson, sd; 2 Watson, dr 100 ft.

BRAZORIA COUNTY—Atlantic Oil Prod. Co.'s No. 1 Frost, dr 1850 ft. Baker & Lindsey's No. 2 Marmion, rigging up. Freeport Sulphur Co.'s Nos. 9 Dannenbaum, dr 3845 ft; 1 Seburn, standing. Mustand Oil Synd.'s No. 1 Allison, dr 2100 ft. Texas Co.'s No. 9 Mound, dr 2800 ft. H. L. Bearss' No. 6 Humble, dk.

HARRIS COUNTY—Durfee et al's No. 1 Stewart, dr 2500 ft. Fairbanks Oil Co.'s No. 1 Wilkens, dr 4250 ft. Humble-Gulf Coast's No. 2 Dunks, dr 3100 ft. Gulf Prod. Co.'s No. 15 Warren, dr 4000 ft. Texas Exploration Co.'s No. 4 Warren, sd. Amerada Pet. Co.'s No. 1 Berry, dr 3300 ft. Pierce Junction 500-acre Synd.'s No. 1 Minnitex, dr 2100 ft. Link Oil Corp.'s No. 1 Davis, dr 1960 ft. A. B. Kelly's Cross Timbers well, sd.

MONTGOMERY COUNTY—State Land Oil Co.'s No. 1 Knox, sd.

ROBERTSON COUNTY—Central Texas Pet. Co.'s No. 1 Salter, dr 1480 ft.

SABINE COUNTY—Deering et al's No. 1 Harris, sd.

WALKER COUNTY—South Texas Prod. Co.'s Nos. 1 Jones, dr gas well; 1 Eastham, sd. Lancaster et al's No. 1 Gibbs, lcn.

Kansas Wildcats

(After the first report wells shut down, rigs and locations will be eliminated until further operations are begun.)

CHASE COUNTY—Dutton & Gillespie's No. 1 Mercer, NE 7-22-7, dr 1580 ft.

HARVEY COUNTY—Cain et al's No. 1 Hickerson, SW 4-24-1e, dr 2020 ft.

KINGMAN COUNTY—Haynes et al's No. 1 Royl, SW 16-27-7w, 1 foot in gas sand, 1,000,000 cubic fet of gas and straight reaming 1600 ft.

OSBORNE COUNTY—Delhi Oil Co.'s No. 1 Dorman, SW 20-10-11w, dr 3257 ft.

SEWARD COUNTY—Seward County Oil & Gas Co.'s No. 1 Sealey, NE 20-23-33w, dr up ur lugs, 1810 ft.

SUMMER COUNTY—Sanders et al's No. 1 Bradshaw, SE 24-30-3w, ur 2100 ft. Spencer et al's No. 1 Knox, SE 3-35-1w, dr 1265 ft.

TREGO COUNTY—Polin et al's No. 1 Walsh, SE 5-11-25w, co 1700 ft.

Oklahoma Wildcats

(After the first report wells shut down, rigs and locations will be eliminated until further operations are begun.)

BECKHAM COUNTY—Twin Hill Oil & Gas Co.'s No. 1 George, SW 15-9-23w, dr 1520 ft.

CUSTER COUNTY—Parker Oil & Gas Co.'s No. 1 Ruth, NW 1-15-15w, dr 2510 ft. Porter Lease Synd.'s No. 1 Kimball, SE 28-14-23w, trying to side track crook-

ELLIS COUNTY—Gage Oil Co.'s No. 1 James, SW 2-21-24w, fsh 336 ft.

GRADY COUNTY—Tuttle Oil Co.'s No. 1 Thomas, NE 10-9-6w, dr 2615 ft. Iowa Oil Co.'s No. 1 Taylor, NE 31-7-6w, dr 2200 ft. Magnolia Pet. Co.'s No. 1 Long, SE 33-5-7w, dr 2800 ft.

GRANT COUNTY—Geo. Borthup et al's No. 1 Senser, NW 23-28-5, fsh 1770 ft. Day Oil Co.'s No. 1 Reed, NE 36-28-5w, spudding. Red Hill Oil & Gas Co.'s No. 1 Bradley, SW 28-27-6w, dr 1900 ft. Western States Land Co.'s No. 1 Howell, SW corner 14-27-3w, timbers; 1 Stewart SE 22-27-3w, swedging cas 2705 ft; 2 Stewart, SE corner 22-27-3w, 15,000,000 cu ft of gas, 1200 ft.

HUGHES COUNTY—Noco Oil Co.'s No. 1 Nelson, NW 9-4-7, dr 910 ft.

LOGAN COUNTY—Roxana Pet. Corp.'s No. 1 Cole, NW 24-17-2w, dr 3765 ft.

KINGFISHER COUNTY—Simmons Oil Co.'s No. 1

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NE 13-19-8w, dr 1050 ft. Fensland Oil Co.'s No. 1 Brady, NW corner 21-19-5w, rig.

LINCOLN COUNTY—Shaffer Oil & Ref. Co.'s No. 2 Sharrum, NW 5-17-4, dr 460 ft.

ed pipe 2172 ft.

McCLAIN COUNTY—Transcontinental Oil Co.'s No. 1 Fleming, NE corner 14-5-4e, fsh 2880 ft. Doans Pet. Co.'s No. 1 Cook, NE 30-5-4e, dr 2650 ft.

MURRAY COUNTY—Corn Husks Oil Co.'s No. 1 Wolf, SW 16-1n-2e, rig.

WASHITA COUNTY—Rita Oil Co.'s No. 1 Joyce, SW 21-11-19, dr 3700 ft. Enid Garber Oil Co.'s No. 1 Wilkinson, NE 20-8-16w, dr 775 ft.

EL DORADO DRILLING REPORT

(Continued from page 181.)

Synd.'s No. 1 Niehus, 19-17-15, sd. El Dorado-Union Oil & Refg Co.'s No. 1 Burns, 33-17-15, sd. E. M. S. Oil Co.'s No. 1 Stamps, 17-18-15, dr 2150 ft. Empire Gas & Fuel Co.'s No. 1 Miller, 25-17-16, sd. Engle et al's No. 1 Nolly, 4-18-15, sd. Enfisco Oil Co.'s No. 1 Benson, 4-19-15, dr 214 ft; 2 Benson, dk lbr; 1 Greenwood, 5-19-15, dr 1325 ft; 1 Nichols, 4-19-15, dr 115 ft; 2 Nichols, rigging up; 1 Pendelton, 20-18-15, dr 1850 ft; 2 Pendelton, dr 310 ft. Eurika Pet. Co.'s N-2 Cullens, 4-19-15, dk; S-1 Cullens, testing 2183 ft; S-2 Cullens, dk; S-3 Cullens, dk lumber on lcn. Equitable Pet. Co.'s No. 1 Barton, 33-17-16, set 6-in 2032 ft. Equitable Oil Co.'s No. 3 Snowden, 20-18-15, set 6-in 2100 ft.

Federal Petroleum Co.'s No. 3 McKinney, 25-17-16, sd. First Natl. Oil Co.'s No. 1 Britt, 13,18-16, sd. Foster et al's No. 1 Cobb, 5-19-15, rigging up. Foster Pet. Co.'s No. 2 Daniels; 19-18-15, dk. Foster Oil Co.'s No. 7 Hinson, 7-18-15, to pump 2196 ft. Franklin Parish Oil Co.'s No. 3 Snowden, 20-18-15, to pump 2164 ft. Fullilove Drlg. Co.'s Nos. 1 Mann, 29-18-15, dr 180 ft; 2 Mann, dk.

G. S. & G. Oil Co.'s Nos. A-1 Cates, 4-19-15, fsh; 5 Cates, 33-18-15, to pump, 2156 ft; 6 Cates, dk. G. & E. Synd.'s No. 2 Stamps, 14-18-15, sd. George et al's No. 6 Goodwin, 31-17-15, set 6-in 2115 ft. Gladys Bell Oil Co.'s Nos. 3 Boyd, 6-18-15, to pump, 2133 ft; 4 Mack, 8-18-15, dk; 5 Mack, dr 2128 ft. Grant et al's No. 5 Pickering, dr 1419 ft. Gulf Ref. Co.'s Nos. 1 Cates, 32-18-15, dr 410 ft; 2 Cates, dk; 1 Lena Goodwin, 35-17-16, dr 3151 ft; 2 Jackson, 24-17-16, to pump, 2205 ft; 8 Rowland, 5-18-15, to pump 2116 ft; 4 Thurkill, 29-18-15, set 6-in 2067 ft; 5 Thurkill, set 6-in 2060 ft; 6 Thurkill, dr 102 ft; 7 Thurkill, rigging up.

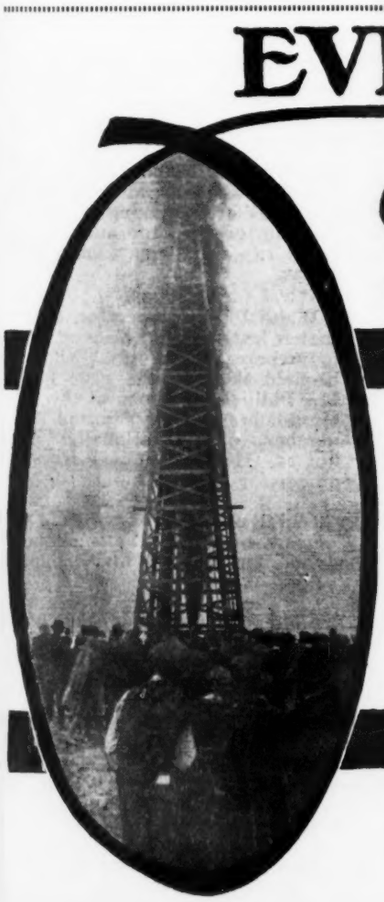
S. P. Harrel's No. 1 Hamilton, 24-19-16, dk. Harrell & Hatcher's No. 1 Burns, 32-18-15, dr 192 ft; 3 DeCou, 8-18-15, dk; 1 Thurkill, 29-18-15, dr 1750 ft; 2 Thurkill, dk. Harris Drlg. Co.'s No. 1 Greenlee, 33-18-15, dk. Harper et al's No. 1 Taylor, 4-19-15, dr 2080 ft. F. C. Henderion's No. 1 Cates, 32-18-15, dk; 2 Cates, dk; 3 Cates, lcn; 4 Cates, dr 220 ft; 5 Cates, dk; 1 Cullens, 4-19-15, dr 760 ft; 2 Cullens, dr 190 ft; 1 Garrett, dr 2160 ft; 3 Garrett, dr 385 ft; 4 Garrett, dr 1010 ft; 4 Pratt, 8-18-15, dk. Hickman et al's No. 1 Carroll, 29-18-15, dr 1620 ft; 2 Carroll, set 6-in 2113 ft. Hickman & Baird's No. 5 McKinney, 5-18-15, dk; 6 McKinney, lcn. Hollifield et al's No. 4 Kirksey, 24-17-16, testing 2178 ft. Hobbs Oil Co.'s No. 4 A. Hinson, 6-18-15, set 6-in 2123 ft; 3 Wood, set 6-in 2123 ft. Hodges et al's No. 1 Benson, 5-19-15, dk. Houtz et al's No. 1 Taylor, 4-19-15, set 6-in 2115 ft. Humble Oil Ref. Co.'s No. 1 Alderson, 31-17-15, set cas 2070 ft; 2 Carroll, 29-18-15, set cas 2095 ft; 3 Carroll, dr 2024 ft; Carroll, dr 1930 ft; 5 Carroll, dr 1364 ft; 6 Carroll, rigging up; 3 Hearin, 18-18-15, fsh, 2084 ft; 5 Lacey, 31-17-15, to pump 2194 ft; 1 Taylor, 9-19-15, dk; 2 Taylor, dk. Hunt et al's No. 2 Pickering, 7-18-15, dk; 1 Rowland, 26-18-15, dr 1560 ft.

Ingalls et al's No. 1 Thurkill, 28-18-15, dr 1635 ft.

Johnson Drlg. Co.'s No. 2 Cullen, 4-9-15, dr 190 ft; 1 Benson, 5-19-15, reaming to 2086 ft; 1 Hollman, set 6-in 2066 ft; 1 Traylor, 4-19-15, dk. Johnson et al's No. 1 Nash, 3-19-15, set 6-in 2120 ft. Jones & Kammerlin's No. 3 Cates, 4-19-15, to pump 2196 ft. Jones & Turner's No. 2 Benson, 4-19-15, dk. E. M. Jones' No. 1 Thirkill, 20-18-15, dk. Keen & Woolf's No. 4 McKinney, 30-17-15, dr 2208 ft. Kinnard Oil Co.'s No. 1 Kinnard, 33-17-15, sd. Kline & Jones' No. 1 Pratt, 8-18-15, dk. Knapp et al's No. 1 Cobb, 14-19-15, dk. Knott et al's No. 1 Nash, 29-17-15, sd.

La Grande et al's No. 1 J. L. Popp, 32-19-15, dk. La-Tex Oil Co.'s No. 2 Cates, 32-18-15; 3 Cates, dr 1510 ft. La-Va Oil Co.'s No. 1 Hudson, 32-18-15, sd. Lewis et al's No. 1 Greenwood, 5-19-15, to pump, 2199 ft. Dr. List et al's No. 1 List, 25-17-15, sd. Livingston Oil Corp.'s Nos. 1 Woods, 20-18-15, bailing 2120 ft; 2 Woods, dr 1370 ft. Love Oil Synd.'s No. 1 Edgar, 23-17-15, sd. Lucas-Tomberlin's No. 1 Crawford, 31-17-15, sd; 3 Crawford, dk; 1 McKinney, 4-18-15, dk. Lucille Drlg. Co.'s No. 2 Smith, 18-18-15, set 6-in 2139 ft. Lucky Six Oil Co.s No. 1 Murphy, 30-17-15, sd.

Magnolia Pet. Co.'s No. 1 Brown, 16-18-15, set 6-in 2090 ft; 1 Goodwin, 26-17-16, to pump, 2224 ft; 11 Ruth, 8-18-15, dr 2118 ft. McCarter-May's No. 1 Thurkill, 29-18-15, dr 1510 ft. McDuff & Greenwood's No. 6 Newsom, 4-18-15, to pump, 2115 ft. McCauldin et al's No. 4 Lawton, 36-17-16, dr 2133 ft. McLaughlin Oil Co.'s No. 1 Stowe, 5-17-15, rigged and suspended.



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McMurray Drlg. Co.'s No. 2 Thurkill, 29-18-15, fsh; 3 Thurkill, dr 1710 ft. McWilliams et al's No. 1 Snowden, 20-18-15, to pump, 2178 ft. Michigan-Ark Oil Co.'s No. 2 Cates, 33-18-15, dk; 1 Norris, 32-19-15, sd. Milo Drlg. Co.'s No. 1 Robbins, 1-19-16, sd; 3 Snowden, 20-18-15, to pump, 2160 ft; 4 Snowden, sd; 5 Snowden, dr 50 ft; 6 Snowden, dk. Middlesex Oil Co.'s No. 2 Cates, 4-19-15, dk; 3 Cates, dk. Miller & Winger's No. 2 Cullens, 4-19-15, dr 60 ft. Mo-El Dorado Oil Co.'s No. 1 McKinney, 4-18-15, sd. Tom Mitchell Oil Co.'s No. 1 Kinard, 33-17-15, sd. Morefield et al's No. 1 Cates, 33-18-15, to pump, 2172 ft; 1 Ingrim, 25-17-16, testing 2193 ft. Morris Drlg. Co.'s No. 1 Woods, 20-18-15, dr 1210 ft. Montgomery et al's No. 1 Rogers, 10-19-15, dk. Mutual Oil Co.'s No. Spooner, 29-19-16, sd.

Naco Pet. Co.'s No. 4 Wells, to pump, 2194 ft. J. L. Nelson's No. 1 Buswell, 19-18-15, set 6-in 2110 ft; 1 Cullens, 4-19-15, dk; 2 Thurkill, 29-18-15, dk. N. W. El Dorado Oil Co.'s No. 1 Goodwin, 23-17-16, sd.

Olvey et al's No. 1 Mann, 29-18-15, dr 1410 ft; 2 Mann, set 6-in 2119 ft. O'Mara et al's No. 1 Greenlee, 33-18-15, to pump, 2176 ft. Orr et al's No. 1 Woods, 29-18-15, dr 530 ft.

W. J. Payne et al's No. 1 Kinard, 29-17-18, sd. Phillips Pet. Co.'s Nos. 1 Mann, 29-18-15, dr 670 ft; 2 Mann, dr 215 ft; 3 Mann, dk. Phillips et al's No. 1 Nolly, 4-18-15, dk. Pratt Oil Co.'s No. 1 Hudson, 10-19-15, dk. Pure Oil Co.'s Nos. 6 Brown, 8-18-15, dk; 4 Hinson, 6-18-15, to pump, 2153 ft. Pyle et al's Nos. 2 Stamps, 17-18-15, sd; 3 Stamps, dk.

Quaker City Pet. Co.'s No. 1 Dumas, 17-17-15, sd.

Ramsey et al's No. 4 Bell, 31-17-15, dk. D. C. Richardson's Nos. 2 Garrett, 4-19-15, dr 1660 ft; 1 Greenlee, 28-18-15, dk. Richardson Oil Synd.'s No. 1 Hudson, 20-17-15, sd. Robb et al's No. 1 Thomas, 16-18-14, dr 330 ft. Romine et al's No. 1 Cobb, 9-19-15, dk. Rooker et al's No. 1 Cordell, 24-17-16, dr 992 ft; 2 Cordell, dk; 2 Kirksey, set cas 2190 ft. E. H. Rammage's No. 1 Thurkill, 28-18-15, dr 1645 ft; 2 Thurkill, dr 1485 ft.

Schaeffer O. & R. Co.'s Nos. 2 Buswell, 19-18-15, dk; 3 Buswell, dk; 4 Buswell, dr 1412 ft. Shreveport P. & R. Co.'s No. 1 Howard, 12-18-16, sd. Skelly Oil Co.'s No. 4 Helwig, 5-18-15, to pump, 2150 ft. Smith Oil Co.'s No. 1 Stamps, 17-18-15, dk. Souther Oil & Land Co.'s Nos. 5 Armstrong, 31-17-15, set 6-in 2161 ft; 6 and 7 Armstrong, dks; 8 Armstrong, dr 1770 ft; 9 Armstrong, dr 1219 ft; 10 Armstrong, dk. Standard Oil Co.'s No. 1 Areson, 3-18-15, dr 2269 ft; 4 Armstrong, 31-17-15, dk; 2 Burns, dr 2164 ft; 2 Cates 33-18-15, to pump, 2146 ft; 3 Cates, set 6-in 2115 ft; 4 Cates, dr 1535 ft; 2 Cordell, 24-17-16, set 6-in 2113 ft; 2 Garrett, 4-19-15, set 6-in 2132 ft; 3 and 4 Garrett, dks; 5 Garrett, dr 60 ft; 3 Goodwin, 36-17-15, set 6-in 2120 ft; 3 Helwig, 7-18-15, dr 1084 ft; 7 Hearin, 18-18-15, swabbing, 2176 ft; C-4 Hinson, 7-18-15, to pump, 2190 ft; 1 Hill, 12-18-16, dk; 7 Ingrim, 25-17-16, dk; 1 Murphy, 6-18-15, dr 177 ft; 2 Reynolds, 6-18-15, to pump; 1 Sample, 36-17-16, dk; 6 Thompson, 19-18-5, to pump, 2177 ft; 7 Thompson, dr 2165 ft. Stella Pet. Co.'s No. A-1 Cates, 4-19-15, to pump, 2204 ft; 7 Cates, 33-18-15, set 6-in 2047 ft. Stock et al's No. 2 Dumas, 20-17-15, dk; 3 Woods, 20-18-15, dk. Success Oil Co.'s No. 1 Miller, 32-18-15, dk. Sun Co.'s No. 6 Brown, 8-18-15 dk; A-9 Carroll, 17-18-15, testing 2137 ft.

Talma Oil Co.'s No. 1 Garrett, 4-19-15, testing 2182 ft. Tarver & Moorefield's No. 1 Nash, 29-17-15, dk. Tarkington Oil Co.'s No. 1 Tarkington, 5-19-15, sd. Ten Spot Oil Co.'s No. 2 Pickering, 17-18-15, dk. Teat et al's No. 2 Brown, 20-18-15, rigging up. Terry-Fields Oil Co.'s No. 1 Smith, 30-17-14, dr 2075 ft; 1 Green, 19-19-15, set 6-in 2054 ft. Trammel & Zoder's No. 1 Thurkill, 29-18-15, testing 2066 ft. Triangle Oil Co.'s No. 3 Simms, 31-171-15, sd. Tri-State Oil Co.'s No. 1 Nash, 3-19-15, dr 1335 ft. Trooper Oil Co.'s No. Alphin, 4-18-15, dk. Twin States Oil Co.'s No. 1 Howard, 13-18-16, sd.

Union Pet. Co.'s No. 1 Helm, 9-9-16, set 6-in 2030 ft.

Vaughan et al's No. 1 Harris, 16-18-15, dk. Vaughan & Gray's No. 1 Cullen, 4-19-15, dk; 2 Benson, dk. Van Heuvel et al's No. 1 Yocum, 29-17-15, dk.

Walker Oil Co.'s No. 2 Flournoy, 4-17-17, sd. Washington Oil Co.'s No. 1 Cates, 33-18-15, sd. Watkins et al's No. 2 Baker, 7-18-15, set 6-in, 2139 ft. Watkins Drilling Co.'s No. 1 Atkins, 32-18-15, sd. Wier et al's No. 1 Greenwood, 4-19-15, set 6-in 2120 ft. Weiss Oil Corp.'s No. 1 Norton, 12-18-15, dr 1390 ft; 1 Thurkill, 29-18-15, testing 2140 ft; 2 Thurkill, dk; A-1 Thurkill, set 6-in 2073 ft. J. H. West's Nos. 2 Greenlee, 33-18-15, to pump, 2162 ft; 3 Greenlee, dk; 2 Garrell, 4-19-15, to pump, 2195 ft. White Oil Corp.'s No. S-13 Armstrong, 31-17-15, set 6-in 2168 ft. Wilcott et al's No. 4 Rowland, 4-18-15, dk. Williford et al's No. 1 Dumas, 32-16-14, tested sw 2136 ft, sd. Doc Williams Oil Co.'s No. 1 Brown, 4-20-16, sd. Sol Williams Trustee's No. 2 Garrett, 4-19-15, dr 1710 ft; 3 Garrett, dk; 4 Garrett, dr 320 ft. Wilson Oil Co.'s No. 1 Moody, 16-17-14, sd. Woodley et al's Nos. 2 Alderson, 31-17-15, dk; 3 Alderson, fsh; 1 Burns, 32-18-15, dr 1210 ft; 7 Woods, 29-18-15, rigged; 1 Horton, 2-18-15, to pump, 2141 ft; 2 Horton, 1-18-15, testing 2253 ft. Weyman et al's No. 1 Greenlee, 33-18-15, sd.

Zoder & Hincey's No. 1 Pickering, 14-18-16, dk.

PERSONAL MENTION-MEN YOU KNOW

W. B. Corlett, chief of the land and leasing department of The Texas Company in the Wichita Falls district, accompanied by Scout Clarence S. Sweeney, made an inspection of the company's holdings in Jack and Clay Counties during the past week.

W. H. Lyne, former production superintendent for The Texas Company in the Gulf Coast, but now a drilling contractor at Mexia, was in Houston this week.

Thomas B. Slick, independent operator of Oklahoma City, was a Tulsa visitor during the current week.

Hermann Livingston of the Livingston Oil Corporation returned to Tulsa this week from a brief trip to the Mexia section.

Underwood Nazro, vice president of the Gulf companies, returned to his headquarters at Houston this week after a visit to Tampico and the Mexican oil fields.

W. R. Woodord, vice president of the Fort Smith & Western Railroad, was in Tulsa during the past week as a guest of H. F. Wilcox of the Wilcox Oil & Gas Company.

H. T. Ashton, sales manager of the International Ardmore Refining Division of the Pure Oil Company, is back at Tulsa headquarters from a week's conference at the Pure Oil Company's Columbus office.

E. J. Freeman, vice president of the Acme Petroleum Corporation, bade his friends goodbye in Tulsa late last week and departed for Chicago where he goes to take active part in the executive supervision of the company.

Harry M. Runkle, executive manager of the International Steel Derrick and Equipment Company at Columbus, Ohio, is expected in California shortly to further assist in the introduction of his company's all-service steel derrick in the California fields.

Joseph F. Dohan, manager of the machinery department of C. T. Patterson Company, Limited, New Orleans, was in Houston last week.

V. E. Jackson, sales manager for the Texhoma Oil & Refining Company of Wichita Falls, was a business visitor in Fort Worth early this week.

J. B. Culver, chief accountant for the Wichita Falls office of the Manhattan Oil Refining Company, returned early this week from an overland trip to Dallas.

R. M. Bussell, of the sales department of The Stevens Grease & Oil Company of Kansas City, Mo., spent last Tuesday visiting with the trade in Wichita Falls.

J. G. Warren, president of the Warren & Bailey Company of Los Angeles, is negotiating for additional oil field specialties, and plans a more extensive sales campaign during 1922. Mr. Warren is in New York City now on business for his company.

John R. Suman, assistant to the vice president and general manager of the Rio Bravo Oil Company and the East Coast Oil Company, is in Mexico. Mr. Suman's headquarters are at Houston.

EDWARD PRIZER
President of the Vacuum Oil Company.

H. D. Easton, Shreveport geologist, is making investigations in Northern Mississippi for oil operators who are planning to prospect that state for oil and gas.

George B. Fuller, formerly divisional superintendent for the White Oil Corporation in the Wichita Falls district, is now connected with the production department of the Humble Oil & Refining Company in the Coastal fields.

R. L. Dudley, editor and manager of The OIL WEEKLY, is celebrating. A new son arrived Tuesday night and Wednesday he wanted to know if the Statistical Edition was coming out on time. Mrs. Dudley says the latest arrival looks like his father.

Frank Wiegand, who formerly was connected with the Oil Well Supply Company's store at Butler, Pennsylvania, has been transferred and placed in charge of that company's store at El Dorado, Arkansas.

J. R. Trisler, vice president of the Imperial Oil Marketing Company with headquarters at Fort Worth, spent several days last week visiting with friends and business associates in Wichita Falls.

Captain J. F. Lucey, president of the Lucey Manufacturing Corporation, was in Houston this week.

E. R. Perry, vice president of Cosden & Company, has returned to his offices in Tulsa from a trip to Chicago.

George F. Brigham of the North American Car & Foundry Company was back in his offices at Tulsa this week after an inspection trip to Texas.

Frank Wilson, assistant treasurer of the Standard Oil Company of New Jersey, has announced that he retired from the service of that company on January 1.

L. P. Murray, of Dallas, manager of S. F. Bowser & Company of Texas, is spending this week in Houston, where the company is demonstrating new equipment at the South Texas headquarters.

W. C. Thorn, production superintendent for the Pierce Oil Corporation with headquarters at Fort Worth, was in Wichita Falls early this week after making an inspection tour of the corporation's properties in Oklahoma and North Texas.

Waite Phillips, operator, of Tulsa, left last week for Denver, Colo., to prepare for the stock show to be held there in the near future. Mr. Phillips owns one of the largest ranches in Colorado and has a number of exceptionally good horses. He will be away from his offices for about a month.

A. Clark, general manager of the T. & B. Pipe Line Company of Wichita Falls, departed late last week on a business trip to Pittsburgh, Pa.

Richard Repine, with the Hadfield-Penfield Steel Company, manufacturers of oil engines, was in Houston on business during the past week.

R. C. Flournoy, who has charge of Wilson and Willard Manufacturing Company's interests in Mid-Continent and Gulf Coast fields, and who has headquarters in Fort Worth, has been at the company's home in Los Angeles for the past few weeks. He will return to Texas shortly. Wilson and Willard's line of oil field specialties are in use the world over.

SQUEAKS from the BULL WHEEL

PIERCE JUNCTION BLUES

J. W. Cottrell of Claysville, Pa., commenting on this department, has this to say with reference to a recent "Squeak:"

"That modern Homer who smote his lyre and evolved 'The Pierce Junction Blues,' has the goods all right, but say, brother, I was wondering whether the hymn numbers got a trifle mixed or if they used a revised edition of the hymnal in your church?—Eh!"

We told the boss that we were standing mighty close to the slush pit when we wrote that, and now we have slipped in. After this we are going to stay nearer to things we know more about, neither of which are tunes or hymn books.

Maybe our Pennsylvania friend is right in referring to "lyre" in this connection, but it was imposible to say Homer in conjunction with the thought of falling production, especially in Louisiana.

What we can't understand about Governor Neff's order sending the soldiers to Mexia is the consignment of "jake" he sent with the army. We have never tried "jake," but we have been told that it has wonderful potentialities.

A news story from Brockton, Mass., tells of a judge granting citizenship to a man named Beer, but refusing it to one named Wine, on the ground that he had claimed exemption as an alien during the war. Right, judge—we don't want any wine with no fight in it.

PURCHASING EFFICIENCY

Salesmen who have haggled with customers over prices will appreciate this one:

The purchasing agent was out in the field and phoned into the office that there was a fire, and that a quantity of hose should be purchased at once.

"Pay the same price for it that we did for the last we got?" queried the assistant.

"Price hell—the field's on fire."

TRUTHFUL, ANYWAY

The two village troublemakers had gotten into a row and the matter was up in court. Uncle Wash, an old gentleman of color, was a witness.

"Now, Uncle," said the lawyer, "tell me just what conversation occurred."

"I kain't jes' remember it all," replied the candid Wash, "cept dat each one was callin' de other what dey is."—American Legion.

FEMININE FINANCE

"Dear," said Mrs. Newlywed, "I needed a new hat, so I just wrote a check for $50 on the First National to save you expense."

"Great gosh!" gasped her husband, "I haven't a nickle in that bank!"

"I know it dear, but that will be all right. They won't mind. Their advertisement says: 'Our Resources Are One Million Dollars.'"—American Legion.

THE EXODUS

It is very noticeable that when the State Rangers took charge of Mexia assisted by the Texas National Guard last week, that there was a general exodus of tank men to Houston and vicinity. Among those that took the lead were Geo. H. Kinney, of the Kansas City Structural Steel and Bill Dyer, of the United Iron Works Company. They came in different box cars.

OTHERWISE OKEH!

Does anyone want a secretary? Slightly decayed Bachelor of Arts, fairly intelligent, widely travelled in several remote nations of the world, and of undoubted impecuniosity, offers his services.—Ad in The London Times.

Without a doubt Orange has a real oil field, but the Chamber of Commerce does not seem to be satisfied, thinking apparently that to be the real thing they should have lease hounds crowding each other in the streets. We know of one night's lodging money they lost by overplaying the facts about how people were flocking there. Really there are about as many people on the streets of Orange as used to be on Saturday afternoon when it was a rice farming town.

Let's don't be too hard on the senate for seating the senator with the dollar marked toga. Newberry had the berries and could af-Ford it. And it takes a big machine to beat a Ford in Michigan as well as elsewhere.

After trying everything down to martial law for enforcing the Volstead Act, the enforcement department has started propaganda telling of the number of deaths from poisoned booze and has asked that jokes about prohibition be stopped. No one has been joking about prohibition—the enforcement, that's the joke.

HERE! HERE! YOU'RE COURTIN' TROUBLE

"You beautiful Osage hills! I love your rocks and rills! The juice within your stills, my heart with rapture thrills."—Nelagoney News.

OVERHEARD AT THE MOVIES

During the presentation of "The Queen of Sheba," the usual editorial matter that takes up about half the time gave out the information "Taken from The Book of Kings." A young man in the audience was heard to remark to his lady companion, "We will have to get that book."

SOME MORE TULSA MADE

The following conversation was overheard the other day in a port far away from Tulsa town. It listened so good to our correspondent that he passed it on to the Bulletin that Tulsa folks might know a little more about it.

"Losiama todi comesta paquat la machina-" which, being interpreted into good Oklahoma English, means "what-the-hell-kind of machine is that?"

"Loti samat aqua pompina gogeti," which means that it's the best gol darn pump ever shipped into Roumania.

"Por companyi manufatado la machina?" and the answer was that the pump was manufactured in Tulsa, Oklahoma, by the Gaso Pump & Burner Co.

"Coma la Toolsa?" by which he means where the heck is Tulsa, and, replying in Burmese, he was advised that Toolsa is in the very heart of the oil industry of the entire world—including Roumania.

The above conversation was overheard at one of the transfer ports for European merchandise. And was occasioned by the arrival of a shipment of eight 7½"x5"x10" steam pumps, made in Tulsa by the Gaso Pump & Burner Co., and consigned to the Standard Oil interests in Roumania.

This is the second shipment to the same firm, the first one consisting of six pumps of the same size and style.

It is a well known fact that number twenty-six never buys anything for old times' sake. The goods must be good goods (excuse us, Julius) or the order is never issued.

And in far-away Roumania a bunch of Tulsa-made pumps is chugging away at its song of Patrick-Murphy-Patrick-Murphy-Patrick-Murphy. Ever listen to a donkey pump sing that song on a cold, clear night, theremometer somewhere near the bottom, and two hours till the other guy came on tour?—Exchange Bureau Bulletin.

Miss Vassey Lean said that she asked her cousin, Axel G. Reese, why he was moving away up to Boston, and he told her that he thought it proper that he live in the Hub City.

ARABIC GEOLOGY

One incident that occurred while I was working in the neighborhood of the Dead Sea is worth recording both for its humor and its moral. Some of the local notables at Jericho were very anxious that I should see a fine occurrence of "bitumen" a few miles to the south. It was stated that an earlier investigator had been there, who, after examining the deposit, was so pleased with it that he refused to travel farther afield to see others, but promptly returned to Jericho and wrote his report in glowing terms.

I went to the place and found a cave in the conglomerate which is often banked against the foot of the great stone walls which run a thousand feet up from the side of the Dead Sea. The walls of the cave were black and shiny as though it was cut out of a bituminous mass. I scrambled all over the cliff, but not a trace of bitumen could be found in the rocks outside. I entered the cave again, found several inches of wood ash on the floor and signs of human habitation. On questioning a Bedouin guide I found that the cave was a favorite haunt of shepherds, who made fires for themselves out of the timber from the resinous bushes which are so plentiful in this locaiity (gum arabic is obtained from such bushes). The resin so volatilised had condensed on the walls and ceiling of the cave, and, being mingled with soot, gave rise to the bituminous appearance. A few blows with the hammer soon set all doubts at rest. I have often wondered about that favorable report! — Dr. Arthur Wade in Oil News, London.

PERSONAL MENTION

R. L. Blaffer, vice president of the Humble Oil & Refining Company with headquarters at Houston, visited the Wichita Falls district offices late last week.

Steve Farish, assistant to the vice president of the Humble Oil & Refining Company of Houston, was in Wichita Falls late last week on business for the company.

W. C. (Screener Bill) Rae, dispenser of Trumble gas traps and oil field specialties, with headquarters in Los Angeles, is planning a trip to Houston, Dallas, Shreveport and Tulsa about the middle of the month. "Screener Bill" has friends in every oil community, and when he starts out on a fraternizing trip, he has to make the whole rounds in order to offend no one.

Tulsa, Okla., Jan. 16.—F. H. Wickett of Chicago, president of the Sapulpa Refining Company, was here last week on one of his periodical visits to the Company's sales offices.

GUIDE FOR PURCHASERS

Acid
Sugar Land Mfg. Co.

Accounting Forms
Mid-West Printing Co.

Air Lift Pumping Equipment
Ingersoll-Rand Co.
Sullivan Machinery Co.

Attorneys
Hirsch & Hannay.
Vinson, Elkins & Wood.

Agitators
The Reeves Bros. Co.

Banks
First National Bank of Tulsa

Barrels
Hirsch Cooperage & Steel Package Co.

Belting
Frick-Reid Supply Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Lufkin Foundry & Mach. Co.
Norris Bros.
Oil Well Supply Co.
The National Supply Cos.
Wilson Supply Company

Boilers
The Brownell Co.
Frick-Reid Supply Co.
Kaw Boiler Works Co.
Lufkin Foundry & Mach. Co.
The National Supply Cos.
Oil Well Supply Co.
Titusville Iron Works Co.
Tulsa Boiler & Sheet Iron Wks.
United Iron Works, Inc.
See Oil Well Supplies & Tanks.
Youngstown Boiler & Tank Co.

Burners
Gaso Pump & Burner Mfg. Co.
Lancaster Iron Works
Norris Bros.

Casing Shoes
The National Supply Cos.
Pelican Well Tool & Supply Co.

Compressors
F. W. Heitmann Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.
United Iron Works, Inc.

Cordage
The National Supply Cos.

Couplings
Harrisburg Pipe & Pipe Bending Co.

Crown Blocks
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Dehydrating Processes
De Laval Separator Company.
Petroleum Rectifying Co.
Sharples Specialty Co.

Derricks and Rigs
Peden Iron & Steel Co.
Parkersburg Rig & Reel Co.
Robertson-MacDonald Lbr. Co.
Lee C. Moore & Co.
International Derrick & Equipment Co.

Diamond Core Drills
Sullivan Machinery Co.

Ditchers
Buckeye Traction Ditcher Co.

Drilling Cables
Columbian Rope Co.
Frick-Reid Supply Co.
F. W. Heitmann Co.
Keystone Pipe & Supply Co.
Muskogee Tool Co.
The National Supply Cos.
Peden Iron & Steel Co.
Williamsport Wire Rope Dist. Co.

Drilling Machines
Keystone Driller Co.
North Texas Supply Co.
Parkersburg Rig & Reel Co.

Drilling Equipment
Union Tool Co.

Electrical Equipment
Enameled Metals Co.
Southwest Gen. Elec. Co.

Elevators
Cree-Becker Oil Tool Co.
Dunn Mfg. Co.
Norris Bros.

Engineers
F. W. Freeborn Eng. Co.
A. S. Henley
Lee C. Moore & Co.

Engines
Ajax Iron Works.
Bessemer Gas Engine Co.
The Brownell Co.
C. and G. Cooper Co.
De La Vergne Machine Co.
Foos Gas Engine Co.
Frick-Reid Supply Co.
The Hercules Corp.
Ingersoll-Rand Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Lufkin Foundry & Mach. Co.
The National Supply Cos.
National Transit Pump & Machinery Co.
Oil Well Supply Co.
Peden Iron & Steel Co.
Southern Engine & Pump Co.
Titusville Iron Works Co.

Filling Station Equipment
Boyle Manufacturing Co.

Fire Protection
Foamite Firefoam Co.

Fish Tail Bits
Lufkin Foundry & Mach. Co.
Pelican Well Tool & Sup. Co.
W-K-M Co.

Fuel Oil
Sinclair Refining Company
Empire Refineries
Acme Petroleum Company
Gulf Refining Company
White Oil Corporation

Gasoline Extraction Compressors
Bessemer Gas Engine Co.
Gardner Governor Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Gasoline and Oil Storage Tanks
Chicago Bridge & Iron Works
Kansas City Struct. Steel Co.
Lancaster Iron Works
Lufkin Foundry & Mach. Co.
Parkersburg Rig & Reel Co.

Gas Traps
Buck & Stoddard
Trumble Gas Trap Co.

Gauges
The Foxboro Co., Inc.

Gauge Boards
The Foxboro Co., Inc.

Geologists
James L. Darnell.
Alexander Deussen.
H. D. Easton
Dorsey Hager.
A. S. Henley
Robert T. Hill.
Edwin B. Hopkins.

Grips and Clamps
Norris Bros.

Laboratory Equipment
Fort Worth Laboratories.

Lighting Systems
Lucey Mfg. Corporation.

Lumber
Thos. W. Blake Lumber Co.
E. L. Crain Lumber Co.
Kirby-Bonner Lumber Co.
Robertson-MacDonald Lbr. Co.

Meters
The Foxboro Co., Inc.

Motors
Southwest Gen. Electric Co.

Oil Field Supplies
Atlas Supply Co.
Continental Supply Co.
Frick-Reid Supply Co.
Gulf Coast Mach. & Sup. Co.
Kansas City Struct. Steel Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Lee C. Moore & Co.
Norris Bros.
Oil Well Supply Co.
Oklahoma Tool & Supply Co.
Parkersburg Rig & Reel Co.
Peden Iron & Steel Co.
Pelican Well Tool & Sup. Co.
Southern Brass Mfg. Co.
The National Supply Cos.
United Iron Works, Inc.
Union Tool Co.
W-K-M Co.
Wilson Supply Company

Oil Investments
Kosmos Petroleum Co.
Seguro Petroleum Co.

Oil Producers
Simms Oil Co.
Standard Oil Co. of N. J.

Oil Well Chains
Lufkin Foundry & Mach. Co.

Packers
The Guiberson Corporation.
Layne & Bowler.
Pelican Well Tool & Supply Co.
Robinson Packer Co.

Packing
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
The National Supply Cos.
Oil Well Supply Co.
Peden Iron & Steel Co.
Pelican Well Tool & Supply Co.

Paints
Cook Paint & Varnish Co.
Peden Iron & Steel Co.

Patents
Hardway & Cathey.
Jesse R. Stone.

Pipe
A. M. Byers Co.
Frick-Reid Supply Co.
F. W. Heitmann Co.
Harrisburg Pipe & Pipe Bending Co.
Interstate Pipe Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
F. B. Lynch
The National Supply Cos.
Oil Well Supply Co.
Peden Iron & Steel Co.
Williamsport Wire Rope Co.

Pipe Grips
Norris Bros.

Pipe Screwing Machines
Buckeye Traction Ditcher Co.

Pipe Threading Machines
Standard Engineering Co.

Pipe Wrenches
Dunn Manufacturing Co.
The Guiberson Corporation

Portable Compressors
Ingersoll-Rand Co.
Sullivan Machinery Co.

Portable Drilling Rigs
Lee C. Moore & Co.
Parkersburg Rig & Reel Co.
The National Supply Cos.

Pulleys
Lee C. Moore & Co.

Pulling Machines
The Hercules Corp.
Myrick Machine Co.

Pumps
Axelson Machine Co.
Gardner Governor Co.
Frick-Reid Supply Co.
Gaso Pump & Burner Mfg. Co.
Ingersoll-Rand Co.
Keystone Pipe & Supply Co.
Kinney Manufacturing Co.
Lucey Mfg. Corporation.
Norris Bros.
National Transit Pump & Machinery Co.
The National Supply Cos.
Oil Well Supply Co.
Pelican Well Tool & Supply Co.
Southern Engine & Pump Co.
H. M. Spence
United Iron Works, Inc.

Recorders
Fort Worth Laboratories
The Foxboro Co., Inc.

Refined Products
Acme Petroleum Co.
Deepwater Oil Refineries.
Empire Refineries, Inc.
Gulf Refining Co.
Humble Oil & Refining Co.
Elliott Jones & Co.
Keen & Wolf
Keystone Ranger Ref. Co.
Marland Ref. Co.
Miller Pet. Co.
Mutual Oil Co.
National Pet. Co.
Panhandle Refining Co.
Oklahoma Prod. & Ref. Co.
Producers & Refiners Corp.
Sinclair Consolidated Co.
Standard Oil Co. of N. J.
Sun Co.
Sunshine State Oil & Ref. Co.
The Texas Co.
Trinity Oil Corporation
Union Petroleum Co.
White Oil Corporation.

Refinery Equipment
Chicago Bridge & Iron Works
Frick-Reid Supply Co.
Kansas City Struct. Steel Co.
Kaw Boiler Works Co.
Lancaster Iron Works
Lufkin Foundry & Mach. Co.
John H. Murphy Iron Works
Petroleum Iron Works Co.
Phoenix Iron Works Co.
Sharples Specialty Co.
Titusville Iron Works
Tulsa Boiler & Sheet Iron Wks.
The Reeves Bros. Co.
United Iron Works, Inc.
Wyatt Metal & Boiler Works.

Refining Supplies
Refineries Clay Co.

Rig Irons
Frick-Reid Supply Co.
Houston Structural Steel Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Lee C. Moore & Co.
Mosher Mfg. Co.
The National Supply Cos.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Rotary Rock Bits
Hughes Tool Co.

Rotary Fish-Tail Bits
Pelican Well Tool & Supply Co.

Separators
Buck & Stoddard
DeLaval Separator Co.
Lufkin Foundry & Mach. Co.
Trumble Gas Trap Co.

Strainers
Layne & Bowler Co.
J. H. McEvoy & Co.
Pelican Well Tool & Supply Co.

Structural Steel
Houston Structural Steel Co.
Kansas City Structural Steel Co.
Pennsylvania Tank Car Co.
Riter-Conley Co.
United Iron Works, Inc.

Steel Crown Blocks
Lee C. Moore & Co.
Parkersburg Rig & Reel Co.

Steel Storage Tanks
Phoenix Iron Works Co.
Chicago Bridge & Iron Works

Sucker Rods
Axelson Machine Co.
Norris Bros.
The National Supply Cos.

Stills
The Reeves Bros. Co.

Tank Cars
American Car & Foundry Co.
North American Car Co.
Gen. Am. Tank Car Corp.

Tanks
The Brownell Co.
Chicago Bridge & Iron Works
Columbian Steel Tank Co.
C. R. Folsom Iron Works
Graver Corporation
Keystone Pipe & Supply Co.
Kansas City Structural Steel Company
Kaw Boiler Works Co.
Lancaster Iron Works
Lufkin Foundry & Mach. Co.
Maloney Tank Co.
Petroleum Iron Works.
Pennsylvania Tank Car Co.
Phoenix Iron Works
Pittsburgh-Des Moines Steel Co.
Parkersburg Rig & Reel Co.
Riter-Conley Co.
Tulsa Boiler & Sheet Iron Wks.
The Reeves Bros. Co.
United Iron Works Co.
Wyatt Metal & Boiler Works.
Youngstown Boiler & Tank Co.

Thermometers
Fort Worth Laboratories
The Foxboro Co., Inc.

Tongs
Dunn Mfg. Co.
Guiberson Corporation
Lufkin Foundry & Mach. Co.
Norris Bros.
Pelican Well Tool & Supply Co.
Wilson & Willard Mfg. Co.

Tools (Fishing and Drilling)
Frick-Reid Supply Co.
Hughes Tool Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Muskogee Tool Co.
The National Supply Cos.
Oil Well Supply Co.
Peden Iron & Steel Co.
Pelican Well Tool & Supply Co.
Sullivan Machinery Co.
Spang & Co.

Tool Joints
Hughes Tool Co.
The National Supply Cos.
Pelican Well Tool & Supply Co.
W-K-M Co.

Tubing Catcher
Guiberson Corporation.
Dunn Mfg. Co.

Under-reamers
Bridgeport Machine Co.

Vacuum Pumps
Ingersoll-Rand Co.
Sullivan Machinery Co.

Valves and Fittings
Frick-Reid Supply Co.
F. W. Heitmann Co.
Keystone Pipe & Supply Co.
Lucey Mfg. Corporation.
Ludlow Valve Mfg. Co.
Lufkin Fdry. & Machine Co.
Norris Bros.
The National Supply Cos.
Peden Iron & Steel Co.
Reading Valve & Fittings Co.
Southern Brass Mfg. Co.
United Iron Works
Wilson Supply Company

Water Gauges
F. W. Heitmann Co.

Wire Fence
Texas Cyclone Fence Co.

Wire Rope
The National Supply Cos.
Williamsport Wire Rope Dist.Co.

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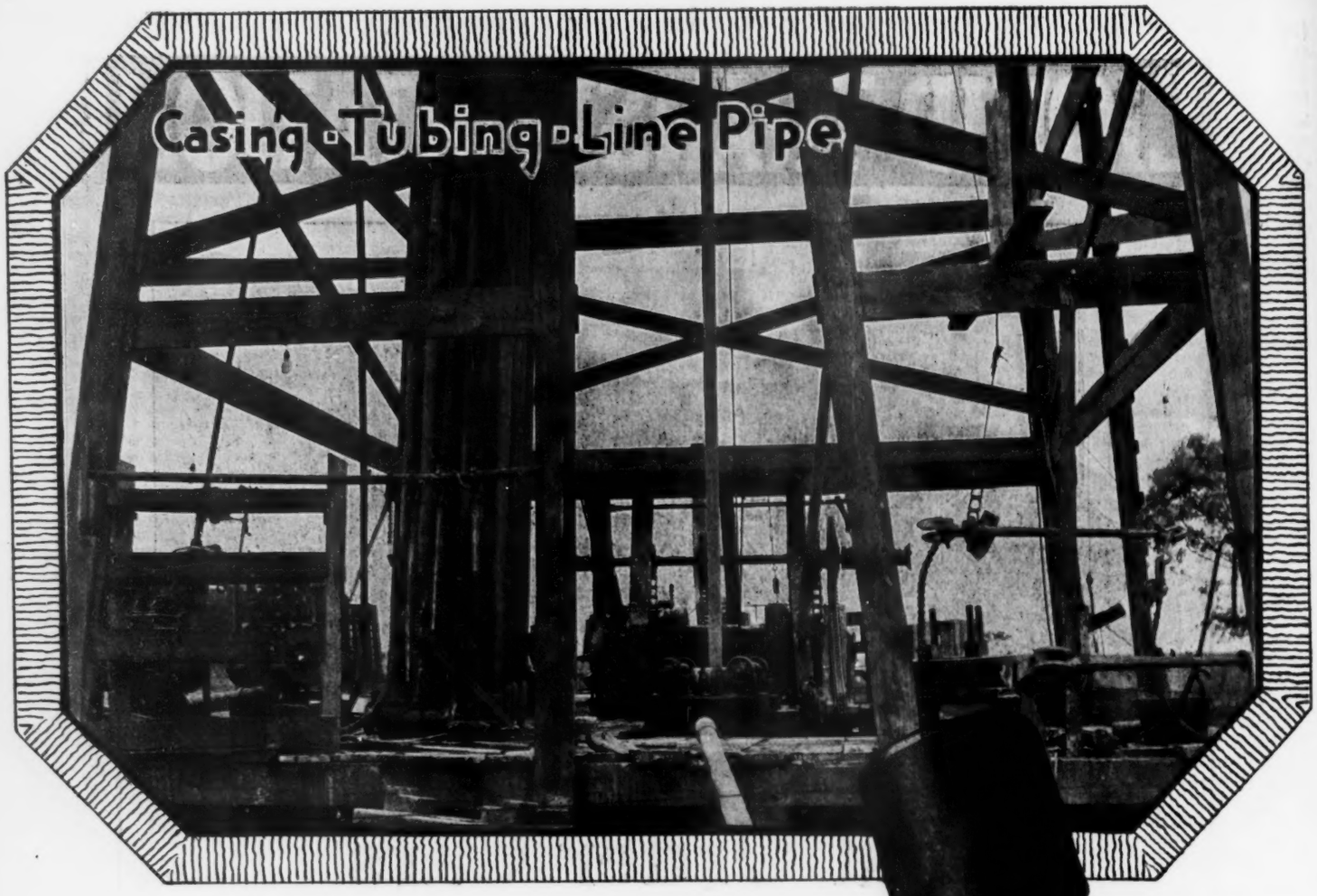

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The upset end is extra long, permitting repeated re-threading. This, in itself, is a visible advantage over such upset pipe as you have seen before.

But you must go deeper than the surface to get at the real reason for the high value of Byers pipe. It is in the **grain** of the iron. You know oak has a fiber which makes it at one time **tough** and **rigid.** Byers Pipe has a similar fiber which gives it the toughness of a wire cable, combined with a physical strength far beyond all ordinary drilling stresses.

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